

**SUBMITTAL TO THE BOARD OF SUPERVISORS  
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**



ITEM: 12.1  
(ID # 20543)

**MEETING DATE:**

Tuesday, February 07, 2023

**FROM :** DEPARTMENT OF WASTE RESOURCES:

**SUBJECT:** DEPARTMENT OF WASTE RESOURCES: Approval of the Right of Entry Agreement between County of Riverside and Pulte Home Company, LLC, for Tract Map 33410 in the Highgrove Area; Districts 1 and 5. [\$0 Department of Waste Resources Enterprise Funds] (CEQA – Nothing Further Required)

**RECOMMENDED MOTION:** That the Board of Supervisors:

1. Approve the attached Right of Entry Agreement (Agreement) between the County of Riverside and Pulte Home Company, LLC (Pulte);
2. Authorize the Chair of the Board to execute this Agreement on behalf of the County; and
3. Authorize the General Manager-Chief Engineer of the Department of Waste Resources, or designee, to execute any other documents and administer all actions necessary to complete this transaction, to include future amendments to the Agreement as needed, subject to County Counsel review.

**ACTION:Policy**

Hans Kemkamp, General Manager - Chief Engineer

1/11/2023

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**MINUTES OF THE BOARD OF SUPERVISORS**

On motion of Supervisor Spiegel, seconded by Supervisor Perez and duly carried by unanimous vote, IT WAS ORDERED that the above matter is approved as recommended.

Ayes: Jeffries, Spiegel, Washington, Perez and Gutierrez  
Nays: None  
Absent: None  
Date: February 7, 2023  
xc: Waste

Kimberly Rector  
Clerk of the Board

By:   
Deputy

**SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE,  
STATE OF CALIFORNIA**

<b>FINANCIAL DATA</b>	<b>Current Fiscal Year:</b>	<b>Next Fiscal Year:</b>	<b>Total Cost:</b>	<b>Ongoing Cost</b>
<b>COST</b>	\$0	\$0	\$0	\$0
<b>NET COUNTY COST</b>	\$0	\$0	\$0	\$0
<b>SOURCE OF FUNDS:</b> Waste Resources Enterprise Funds			<b>Budget Adjustment:</b>	No
			<b>For Fiscal Year:</b>	22/23

**C.E.O. RECOMMENDATION:** Approve

**BACKGROUND:**

**Summary**

Pulte is the developer of Tract Map No. 33410 (TR 33410), which is located adjacent to the closed Highgrove Landfill. TR 33410 was approved at Planning Commission on January 18, 2017. It proceeded to the Board of Supervisors along with General Plan Amendment No. 803 and Change of Zone No. 7321 where all applications were approved on April 11, 2017 (M.O. 17.1).

Pursuant to the Conditions of Approval for TR 33410, Pulte prepared an Operation, Maintenance & Monitoring Plan (OMM Plan) for installation of Vapor Intrusion Mitigation Systems (VIMS). While current on-site soil data is not indicative of a risk for vapor intrusion, due to the proximity to the closed landfill, passive VIMS will be installed on the homes within Tract 33410 as a precautionary measure to minimize potential future residential exposure via vapor intrusion.

The OMM Plan outlines certain activities that Pulte, or their assignee, will carry out, including the monitoring of seventeen soil gas probes that are located within the Highgrove Landfill property (adjacent to TR 33410, well outside of the former disposal area). The Agreement allows Pulte, or their assignee, permission to enter upon and use portions of the landfill property, for the purpose of monitoring the soil gas probes. The Agreement shall expire upon the termination of the obligation to monitor the soil gas probes under the terms of the OMM Plan.

**Prev. Agn. Ref.:** M.O. 17.1 of 4/11/17

**California Environmental Quality Act (CEQA) Findings**

The Agreement, which allows for monitoring of soil gas probes, does not require new ground disturbance and it does not increase the scope, use, or intensity of TR 33410. Approval of the Agreement does not alter the prior analysis or impact determinations made for TR 33410 in the Mitigated Negative Declaration (MND) No. EA 40800, adopted by the Board of Supervisors on April 11, 2017. As such, nothing further is required pursuant to CEQA.



**SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE,  
STATE OF CALIFORNIA**

**Impact on Residents and Businesses**

Monitoring of the soil gas probes, as allowed for in the Agreement, will reduce the potential risk associated with vapor intrusion, thus improving public health and safety for residents within TR 33410.

**ATTACHMENT A. Right of Entry Agreement**



Jason Farin, Principal Management Analyst 2/1/2023



Aaron Gettis, Deputy County Counsel 1/31/2023

7th

February

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1 County Department of Environmental Health (RCDEH), the Santa Ana Regional Water Quality Control  
2 Board (SA-RWQCB) and the Riverside County Department of Waste Resources (RCDWR) (collectively,  
3 "Agencies"). Grantee, including Pulte, or, at such time that the Association is the deemed assignee of Pulte  
4 hereunder, the Association, and their respective agents, employees, consultants and contractors, shall have  
5 the right to enter onto the Property to conduct the monitoring activities as required under the OMM Plan.  
6 In addition, to the extent that Grantee is obligated to conduct any installation or maintenance activities  
7 pursuant to the terms of the OMM Plan, Grantee, including Pulte, or, at such time that the Association is  
8 the deemed assignee of Pulte hereunder, the Association, and their respective agents, employees,  
9 consultants and contractors, shall have the right to enter onto the Property to conduct such installation and  
10 maintenance activities, provided that such right granted hereunder shall not create any obligation of Grantee  
11 to conduct any installation or maintenance activities not otherwise required under the OMM Plan. The  
12 OMM Plan may be updated as site conditions change or as required by the Agencies. The latest version of  
the Agencies approved OMM Plan shall describe the required monitoring activities.

13 (b) General. All responsibilities of, or work to be done by, Pulte or the Association,  
14 including any monitoring activities, each as pursuant to the OMM Plan, shall be at the sole expense and  
15 cost of Pulte or the Association, as applicable. The County shall in no way be responsible for any of these  
16 expenses or costs.

17 2. Term. The term of this ROE Agreement ("Term") shall commence on the date this ROE  
18 Agreement is executed by all Parties hereto ("Effective Date"). This ROE Agreement shall terminate upon  
19 the termination of the obligation to monitor the Soil Probes under the terms of the OMM Plan. The  
20 termination of such monitoring obligations shall be subject to the reports and evaluations required under  
21 the OMM Plan, including an evaluation of the results of the monitoring of the Soil Probes, and any decision  
22 to terminate any further monitoring obligations under the OMM Plan shall be subject to the review of the  
23 applicable Agencies, as provided in the OMM Plan. This ROE Agreement is subordinate to all prior or  
24 future rights and obligations of County in the Property, except that County shall grant no rights inconsistent  
25 with the reasonable exercise by Grantee of its rights under this ROE Agreement.

26 3. Security Obligation. Immediately after the ROE Agreement has been signed by both parties,  
27 Pulte shall furnish a surety bond, cash, letter of credit or other security reasonably acceptable to the County  
28 in favor of the County ("Security") for any documented costs incurred by the County to repair any damage

1 to Soil Probes or other County structures or assets (fencing, gates, water lines, drainage, etc.) within the  
2 Property due to damage caused by Grantee or their agents during the period commencing upon the execution  
3 of this ROE Agreement by both parties and terminating upon the expiration or termination of this ROE  
4 Agreement. The total Security for repair of any of the foregoing items shall be \$70,000. Upon the  
5 assignment of this ROE Agreement to the Association, the Association may replace the Security furnished  
6 by Pulte with a Security furnished by the Association in like amount and subject to the same terms and  
7 conditions as the Security furnished by Pulte. Upon the replacement of the Security furnished by Pulte with  
8 one furnished by the Association or upon expiration or termination of this ROE Agreement, the County  
9 shall, upon determining no damage was caused by Pulte or its agents to Soil Probes or other County  
10 structures or assets, deliver to Pulte or the Association, respectively, and any designated escrow depository  
11 any and all documents reasonably necessary to cause the release and exoneration of the Security. The  
12 amounts stated in this paragraph shall not in any way limit the liability of Grantee to the County in the event  
13 Grantee fails to comply with its obligations under the ROE Agreement.

14 (a) This Security amount shall be maintained throughout the ROE Agreement Term and be adjusted  
15 every five years. Said computation shall be equal to the change in the Consumer Price Index (CPI), as  
16 identified in Section 3(b). Said change shall be measured for the sixty (60) month period beginning when  
17 the Term starts and ending sixty (60) months later. The first increase may be effective on the first July 1  
18 date after the sixty-month period, based upon changes in the CPI formula for the five-year period.

19 (b) Adjustments shall be measured by the percentage change in Consumer Price Index- All  
20 Consumers, All Items, Riverside-San Bernardino-Ontario, CA for the sixty (60) month period January  
21 through January immediately preceding the adjustment.

22 4. Assignment to Association. Upon the formation of a homeowners association, as referenced  
23 in the OMM Plan ("Association"), and the commencement of the performance by the Association of the  
24 obligations set forth in the OMM Plan, including the monitoring, maintenance and replacement of the Soil  
25 Probes, the rights of the Grantee under this ROE Agreement may be assigned to and assumed by the  
26 Association, via the delivery to the County of a fully executed Assignment and Assumption Agreement  
27 between Pulte and the Association, the form of which is attached hereto as Exhibit "C", without the  
28 necessity of obtaining the approval of any additional party, including without limitation the County. Upon  
such assignment and assumption, Pulte shall have no further liability or obligations under this ROE



1 Agreement as of the effective date of such assignment, including without limitation in connection with any  
2 action or inaction by the Association.

3 5. Notice of work. Grantee shall notify the County authorities in charge named below by email  
4 at least two working days prior to commencement of entry and work.

5 Name: Planning Manager

6 Address: 14310 Frederick St.

7 Moreno Valley, CA

8 Phone: 486-3200

9 E-mail: WastePlanning@rivco.org and WastePostClosure@rivco.org

10 6. Liens. Grantee shall not permit to be placed against the Property, or any part thereof, any  
11 design professionals', mechanics', material man's contractors' or subcontractors' liens with the regard to  
12 Grantee's actions upon the Property. Grantee agrees to hold County harmless for any loss or expense,  
13 including reasonable attorneys' fees, arising from any such liens which might be filed against the Property.

14 7. Hold Harmless. Grantee shall indemnify and hold harmless the County of Riverside, its  
15 agencies, districts, special districts and departments, their respective directors, officers, Board of  
16 Supervisors, elected and appointed officials, employees, agents and representatives (individually and  
17 collectively hereinafter referred to as "Indemnitees") from any liability whatsoever, to the extent based or  
18 asserted upon any act or omission of Grantee, its officers, employees, subtenants, agents or representatives  
19 arising out of or in any way relating to this ROE Agreement or Grantee's use of the Property, including but  
20 not limited to property damage, bodily injury, or death or any other element of any kind or nature  
21 whatsoever. Grantee shall defend, at its sole expense, including payment of all reasonable and actual costs  
22 and fees, including, but not limited, to attorney fees, cost of investigation, defense and settlements or  
23 awards, directly incurred by the Indemnitees in any claim or action based upon such alleged acts or  
24 omissions. The obligations set forth in this paragraph shall survive the termination or revocation of this  
25 ROE Agreement, provided that upon the automatic and deemed assignment and assumption of this ROE  
26 Agreement to and by the Association, Pulte shall have no further obligations under this paragraph.  
27 Notwithstanding the foregoing, Grantee shall have no liability or obligations, including without limitation  
28 any obligation to provide any defense or indemnity hereunder, with respect to any environmental conditions

1 that exist on the Property, including any conditions that are monitored by the Soil Probes or that are the  
2 subject of the OMM Plan.

3 The specified insurance limits required in this ROE Agreement shall in no way limit or circumscribe  
4 Grantee's obligations to indemnify and hold harmless the Indemnitees herein from third party claims.

5 In the event there is conflict between this clause and California Civil Code Section 2782, this clause  
6 shall be interpreted to comply with Civil Code 2782. Such interpretation shall not relieve the Grantee from  
7 indemnifying the Indemnitees to the fullest extent allowed by law.

8 8. Insurance. Without limiting or diminishing the Grantee's obligation to indemnify or hold  
9 the County harmless, Grantee shall procure and maintain or cause to be procured and maintained, at its sole  
10 cost and expense, the following insurance or self-insurance coverages during the term of this ROE  
11 Agreement. As respects to the insurance section only, the County herein refers to the County of Riverside,  
12 its agencies, districts, special districts and departments, their respective directors, officers, Board of  
Supervisors, employees, elected or appointed officials, agents or representatives as Additional Insureds.

13 a. Workers' Compensation. If the Grantee has employees as defined by the State of California,  
14 the Grantee shall maintain statutory Workers' Compensation. Insurance (Coverage A) as  
15 prescribed by the laws of the State of California. Policy shall include Employers' Liability  
16 (Coverage B) including Occupational Disease with limits not less than \$1,000,000 per  
17 person per accident. The policy shall be endorsed to waive subrogation in favor of The  
18 County of Riverside. Grantee shall have the option to provide coverage through self-  
19 insurance program.

20 b. Commercial General Liability. Commercial General Liability insurance coverage, including  
21 but not limited to, premises liability, unmodified contractual liability, products and  
22 completed operations liability, personal and advertising injury, and cross liability coverage,  
23 covering claims which may arise from or out of Grantee's performance of its obligations  
24 hereunder. Policy shall name the County as Additional Insured. Policy's limit of liability  
25 shall not be less than \$2,000,000 per occurrence combined single limit. If such insurance  
26 contains a general aggregate limit, it shall apply separately to this ROE Agreement or be no  
27 less than two (2) times the occurrence limit. Grantee shall have the option to provide  
28 coverage through self-insurance program.



1 c. Vehicle Liability. If vehicles or mobile equipment are used in the performance of the  
2 obligations under this ROE Agreement, then Grantee shall maintain liability insurance for  
3 all owned, non-owned or hired vehicles so used in an amount not less than \$1,000,000 per  
4 occurrence combined single limit. If such insurance contains a general aggregate limit, it  
5 shall apply separately to this ROE Agreement or be no less than two (2) times the occurrence  
6 limit. Policy shall name the County as Additional Insureds. Grantee shall have the option to  
7 provide coverage through self-insurance program.

8 d. General Insurance Provisions – All lines:

- 9 1. Any insurance carrier providing insurance coverage hereunder shall be admitted to the  
10 State of California and have an A M BEST rating of not less than A: VIII (A:8) unless  
11 such requirements are waived, in writing, by the County Risk Manager. If the County's  
12 Risk Manager waives a requirement for a particular insurer such waiver is only valid for  
13 that specific insurer and only for one policy term. At the option of Grantee, such  
14 requirements are waived in the event Grantee chooses to furnish coverage through self-  
15 insurance.
- 16 2. Grantee shall cause Grantee's insurance carrier(s) to furnish the County of Riverside  
17 with either 1) a properly executed original Certificate(s) of Insurance and certified  
18 original copies of Endorsements effecting coverage as required herein, or 2) proof of  
19 coverage through Grantee's self-insurance program. This ROE Agreement shall  
20 terminate upon the effective date of the expiration or termination of the insurance  
21 policies required hereunder, unless the County of Riverside receives, prior to such  
22 effective date of expiration or termination, another properly executed original Certificate  
23 of Insurance or Letter of Self-Insurance and original copies of endorsements or certified  
24 original policies, including all endorsements and attachments thereto evidencing  
25 coverages set forth herein and the insurance required herein is in full force and effect.  
26 Grantee shall not commence operations until County has been furnished original  
27 Certificate(s) of Insurance or Letter of Self-Insurance and certified original copies of  
28 endorsements and if requested, certified original policies of insurance including all  
endorsements and any and all other attachments as required in this Section. An individual

1 authorized by the insurance carrier to do so on its behalf shall sign the original  
2 endorsements for each policy and the Certificate of Insurance or Letter of Self-Insurance.

3 3. It is understood and agreed to by the Parties hereto that the Grantee's insurance shall be  
4 construed as primary insurance, and the County's insurance and/or deductibles and/or  
5 self-insured retention's or self-insured programs shall not be construed as contributory.

6 4. If, during the term of this ROE Agreement or any extension thereof, there is a material  
7 change in the scope of the ROE Agreement; or, there is a material change in the scope  
8 of entry or permitted activities under this ROE Agreement; or, the term of the ROE  
9 Agreement, including any extensions thereof, exceeds five (5) years; the County reserves  
10 the right to further discuss and analyze with Grantee the types of insurance and the  
11 monetary limits of liability required under this ROE Agreement, if in the County Risk  
12 Manager's reasonable judgment, the amount or type of insurance carried by the Grantee  
13 has become inadequate.

14 5. Grantee shall pass down the insurance obligations contained herein to all tiers of  
15 subcontractors working under this ROE Agreement.

16 6. The insurance requirements contained in this ROE Agreement may be met with a  
17 program(s) of self-insurance acceptable to the County.

18 7. Grantee agrees to promptly notify County of any claim by a third party or any incident  
19 or event that may give rise to a claim arising from the performance of this ROE  
20 Agreement.

21 9. Compliance with Laws. Grantee shall, in all activities undertaken pursuant to this ROE  
22 Agreement, comply and cause its contractors, subcontractors, agents, and employees to comply with all  
23 federal, state, and local laws, statutes, orders, ordinances, rules, regulations, plans, policies, and decrees.  
24 Without limiting the generality of the foregoing, Grantee, at its sole cost and expense, shall obtain any and  
25 all permits which may be required by any law, regulation or ordinance for any activities Grantee desires to  
26 conduct or have conducted pursuant to this ROE Agreement.

27 10. Inspection. County and its representatives, employees, agents or independent contractors  
28 may enter and inspect the Property or any portion thereof or any improvements thereon at any time and  
from time to time at reasonable times to verify Grantee's compliance with the terms and conditions of this



1 ROE Agreement. Grantee shall provide to County all information, test results, findings and reports  
2 generated as a result of conducting any testing, surveys, studies and inspections by Grantee or Grantee's  
3 agents or representatives, if requested by County, subject to any requirements set forth in the OMM Plan.

4 11. Not Real Property Interest. It is expressly understood that this ROE Agreement is not  
5 exclusive and does not in any way whatsoever grant or convey any permanent easement, lease, fee or other  
6 real property interest in the Property to Grantee.

7 12. Protection and Restoration of the Property. Grantee shall protect the Property, including all  
8 improvements and natural resources thereon at all times at Grantee's sole cost and expense, and Grantee  
9 shall strictly adhere to the following restrictions:

10 a. Grantee may not place or dump garbage, trash or refuse anywhere upon or within the  
11 Property, except for self-contained trash receptacles that are maintained to County's  
12 satisfaction by Grantee;

13 b. Grantee may not commit or create, or suffer to be committed or created, any waste,  
14 hazardous condition and/or nuisance to occur upon the Property, provided however, that  
15 Grantee shall have no liability or obligation with respect to any preexisting hazardous or  
16 other condition present on or in the Property;

17 c. Grantee must exercise due diligence in the protection of the Property against damage or  
18 destruction by fire, vandalism or other cause.

19 Upon expiration or other termination of this ROE Agreement, but before its relinquishment  
20 to County, Grantee shall, at its sole cost and expense, remove any materials from the Property that were  
21 placed thereon by Grantee and shall restore the Property to its condition prior to the Effective Date, provided  
22 that Grantee shall have no liability or obligation with respect to any preexisting hazardous or other condition  
23 present on or in the Property, and provided further that Grantee shall have no obligation to remove the Soil  
24 Probes from the Property. Grantee agrees not to damage Property in the process of performing the permitted  
25 activities.

26 13. Public safety. Grantee shall, or cause its contractors or subcontractors to, take any and all  
27 other necessary and reasonable steps to protect the public from harm due to the work Grantee conducts on  
28 the Property.

14. Entire agreement. This ROE Agreement is the result of negotiations between the Parties hereto. The Parties further declare and represent that no inducement, promise or agreement not herein expressed has been made to them and this ROE Agreement contains the entire agreement of the Parties, and that the terms of this ROE Agreement are contractual and not a mere recital. Any ambiguity in the ROE Agreement or any of its provisions shall not be interpreted against the Party drafting the agreement.

15. Warranty of Authority. The undersigned represents that it has the authority to, and does, bind the person or entity on whose behalf and for whom it is signing this ROE Agreement and the attendant documents provided for herein, and this ROE Agreement and said additional documents are, accordingly, binding on said person or entity.

16. Assignment. This ROE Agreement shall not, nor shall any interest herein be assigned, mortgaged, hypothecated, or transferred by Grantee, whether voluntary or involuntary or by operation of law, nor shall Grantee let or sublet or grant any license or permit with respect to the use and occupancy of the Property or any portion thereof without the prior written consent of the County which shall not be unreasonably withheld, provided however that this ROE Agreement may be assigned to and assumed by the Association upon the delivery to the County of the fully executed form of Assignment and Assumption Agreement attached hereto as Exhibit "C" without any consent of the County, as provided in Section 4 of this ROE Agreement.

17. Choice of Law. This ROE Agreement will be governed and construed by the laws of the State of California. In the event any action is brought under this ROE Agreement, venue shall lie exclusively in the County of Riverside.

18. Modification. The ROE Agreement shall not be changed, modified, or amended except upon the written consent of the Parties hereto.

19. Counterparts. This ROE Agreement may be executed in any number of counterparts, all of which taken together shall constitute one and the same instrument, and any party hereto may execute this ROE Agreement by signing any such counterpart.

1 IN WITNESS WHEREOF, the Parties hereto have executed this ROE Agreement on the date first written  
2 above.

3 **COUNTY:**

4 COUNTY OF RIVERSIDE, a political subdivision  
of the State of California

5 Dated: 2/7/23

6 By:   
7 **KEVIN JEFFRIES**  
Chairman, Board of Supervisors

**GRANTEE:**

Pulte Home Company, LLC,  
a Michigan limited liability company

Dated: 1/29/22

By:   
Name: **DARREN WARREN**  
Its: **Vice President Land Acquisitions & Development**

8  
9 **RECOMMENDED FOR APPROVAL:**

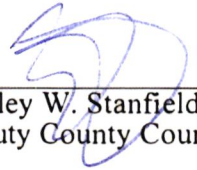
10 By: Hans Kernkamp  
11 Hans Kernkamp  
General Manager-Chief Engineer

12  
13 **ATTEST:**  
Kimberly Rector  
Clerk of the Board

14  
15 By:   
16 Deputy

17 (Seal)

18  
19 **APPROVED AS TO FORM:**  
20 County Counsel

21 By:   
22 Wesley W. Stanfield  
Deputy County Counsel

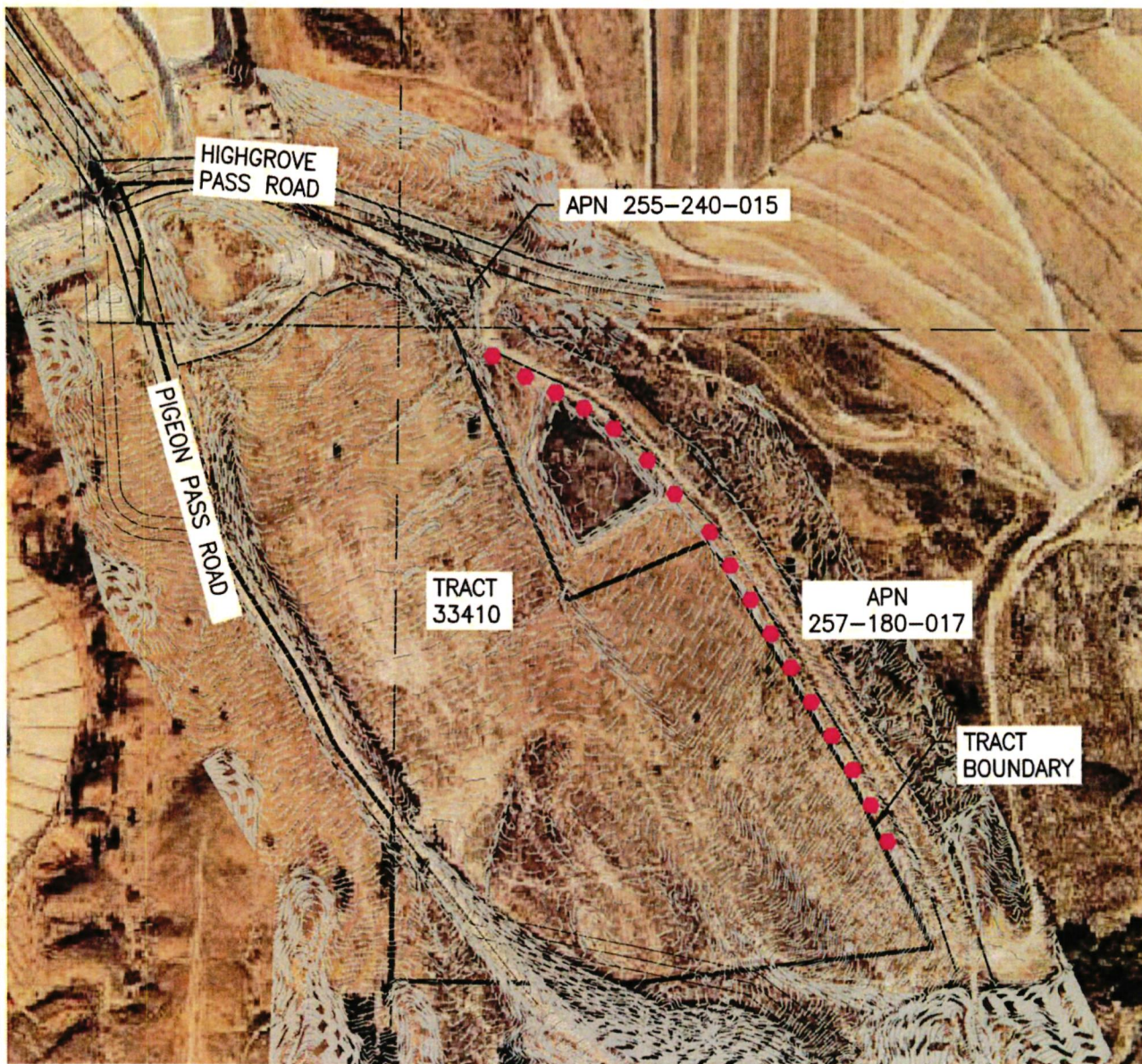
**EXHIBIT "A"**

**PROPERTY DEPICTION with SOIL PROBE LOCATIONS**

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## LEGEND



PROPOSED GAS PROBE

LOCATION:  
RIVERSIDE, CA

ADDRESS:

### GAS PROBE RIGHT OF ENTRY EXHIBIT

ALBERT A.  
**WEBB**  
ASSOCIATES

ENGINEERING CONSULTANTS  
3788 McCRAY STREET  
RIVERSIDE CA. 92506  
PH. (951) 686-1070  
FAX (951) 788-1256

DESIGNED: JAK

CHECKED: JSL

DATE: 4/11/22

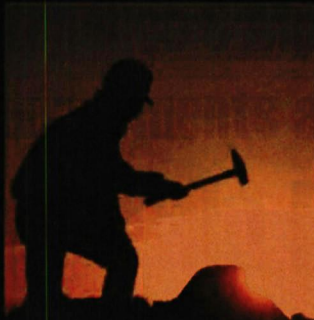
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**EXHIBIT "B"**

**OMM PLAN**

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**GeoKinetics**  
Geotechnical & Environmental  
Engineers

Prepared by

**GeoKinetics**

77 Bunsen  
Irvine, CA 92618

Tel 949.502.5353, Fax 949.502.5354

Operation, Maintenance & Monitoring  
Plan for VIMS Improvements at:  
**Spring Mountain Ranch**  
**Tract 33410**  
Riverside County, California

Prepared for

**Pulte Group**

27401 Los Altos, Suite 400  
Mission Viejo, CA 92691

December 22, 2022

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#### Figures

Figure 1 - Site Location Map

Figure 2 - Recent Aerial Photograph of Site

Figure 3 – Tract 33410 Site Plan with Proposed Improvements / Mitigation

#### Attachments

Attachment A - VIMS Plans

Attachment B – Active System Installation Manual

Attachment C - Standard Smoke Testing Protocol

Attachment D – Right of Entry Agreement



December 22, 2022

Mr. Matt Matson  
Pulte Group  
27401 Los Altos, Suite 400  
Mission Viejo, California 92691


**SUBJECT: OPERATION, MAINTENANCE AND MONITORING PLAN FOR VIMS  
INSTALLATIONS AT SPRING MOUNTAIN RANCH DEVELOPMENT,  
TRACT 33410 – RIVERSIDE COUNTY, CALIFORNIA**

Dear Mr. Matson:

As requested, GeoKinetics has prepared this Operation, Maintenance and Monitoring (OM&M) plan for the Vapor Intrusion Mitigation Systems (VIMS) that are being installed at the above referenced Tract. The OM&M plan has been prepared in general accordance with the California Environmental Protection Agency (CalEPA) Department of Toxic Substances Control (DTSC)'s (2011) *Vapor Intrusion Mitigation Advisory* (Reference 29).

We hope this information is helpful to you. Please do not hesitate to contact the undersigned if you have any questions or comments.

Sincerely,  
GEOKINETICS, INC.

  
Kevin Lea, RCE  
Senior Engineer

attachments



**1.0 Introduction:** This document represents the initial system commissioning and subsequent Operation, Maintenance, and Monitoring (OM&M) Plan for the Vapor Intrusion Mitigation Systems (VIMS) that are to be installed at the proposed Spring Mountain Ranch residential Tract 33410 (Site or Tract). The general site location of the Tract is shown in Figure 1 while a recent aerial photograph of the Tract area is provided as Figure 2. As indicated, the project area is located approximately 2.8 miles east of the 215 freeway, between Sugarloaf and Blue mountains in Riverside County, California. Residential properties exist to the west while commercial buildings exist to the southwest of the Site. The former Highgrove Landfill is located approximately 700 feet east of the boundary of Tract 33410. Tract 33410 is currently graded for 138 residential lots. A site plan illustrating the configuration of Tract 33410 is provided as Figure 3.

Due to the Tract's proximity to the former Highgrove Landfill, Leighton and Associates (Leighton) collected groundwater and soil gas samples at the Site in 2019 (Reference 39) to determine if groundwater and/or soil gas had been affected by volatile organic compounds (VOCs) originating from the former landfill and if the VOC-impacted groundwater plume associated with the former landfill presented a vapor intrusion risk to the Site. Leighton identified benzene in one soil gas sample at a concentration above the residential screening level; no VOCs were detected in the groundwater sample. Roux Associates, Inc (Roux) also performed a soil vapor investigation in July of 2020 during which 51 soil vapor samples (44 primary and 7 field duplicates) were collected across the Site (Reference 41). Benzene was detected in soil gas at concentrations exceeding the applicable residential screening level in 37 samples and tetrachloroethene (PCE) was detected at concentrations exceeding the applicable residential screening level in three samples during the Roux investigation. The source of the contamination was not identified in either report, but a September 24, 2020 Riverside County Department of Environmental Health (RCDEH) review letter, indicated that the Highgrove Landfill should not be ruled out as a source. Leighton subsequently provided a letter of opinion (Reference 42) indicating that the widespread benzene readings detected by Roux may have been due to cross contamination issues during Roux's sampling, and not to actual site conditions.

Based on the Site's proximity to the former landfill, as well as the above referenced soil gas assessment results, passive VIMS systems will be installed on the homes within Tract 33410 as a precautionary measure in order to minimize potential future residential exposure via vapor intrusion on the Tract.

**2.0 Goals and Objectives:** This Plan defines the initial system commissioning (i.e., testing and certification) and subsequent ongoing OM&M procedures and obligations for the VIMS that are being installed at the residential homes to be constructed in the Tract, including the monitoring of the landfill boundary conditions. Pulte Home Company, LLC, a Michigan limited liability company (Pulte) will install VIMS systems on all homes in the tract. While the passive

VIMS are expected to provide adequate protection from any unacceptable vapor intrusion exposure at the Tract, the systems have been designed such that they can be converted to an active mitigation system (i.e., sub-slab depressurization (SSD) systems) if required at a future date.

This plan:

- Defines the system commissioning tasks for the passive VIMS for the Tract;
- Defines OM&M procedures and obligations for the passive VIMS for the Tract;
- Defines the system commissioning tasks for some of the active VIMS components to be installed on each home in preparation for potential future active components for the Tract;
- Provides an installation manual for the remainder of the active components in the unlikely event that they are required to be installed.
- Defines the entities, their roles, and their responsibilities for the implementation of the activities noted in this Plan; and
- Discusses a contingency plan that addresses any un-anticipated need for additional actions<sup>1</sup>.

**3.0 Entities / Roles / Responsibilities:** Pulte has agreed to design, install and commission the VIMS on the residences on Tract 33410 in accordance with the final designs and specifications as approved by RCDEH and Riverside County Department of Waste Resources (RCDWR). Pulte will also prepare a Soil Vapor Declaration for each home buyer which is a Declaration of Covenants, Conditions, and Restrictions regarding the soil vapor mitigation and includes prescribed notifications, prohibitions, and controls that are needed for each affected property. It will also explain that the limitations, restrictions, covenants, and conditions run with the land and are binding to every individual who owns the affected property in the future. The final version of the VIMS plans, and this OM&M plan, will be attached to the Soil Vapor Declaration as an Exhibit.

Finally, Pulte will be creating a planned unit development, including a homeowners association that will be established as a California nonprofit mutual benefit corporation (Association) that will be subject to a Declaration of Covenants, Conditions and Restrictions and Establishment of Easements

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<sup>1</sup> This may include damage due to significant earthquakes that directly impact the barrier system.

(Community Declaration). The Association will oversee certain long-term OM&M components of the systems as described in this Plan, including the long term monitoring of the off-site soil gas probes installed between Tract 33410 and the southern perimeter of the landfill, and enforcing any actions that may be required of homeowners with regard to any monitoring of passive VIMS or the activation of any active VIMS if so required hereunder, provided that the Association will only undertake the soil gas probe monitoring and associated reporting obligations described in this Plan at such time as the Association obtains the right to access the property on which the soil gas probes are located. Prior to the Association performing such activities, Pulte shall perform the soil gas probe monitoring and associated reporting activities set forth in this Plan and any reference to the Association herein with respect to such monitoring and reporting activities shall be deemed to mean Pulte. The funding necessary to implement the planned activities will be generated from assessments paid to the Association by its homeowner members under the terms of the Community Declaration.

The Association will be responsible for retaining, managing, and overseeing environmental and other consultants or professionals and/or contractors to implement, or assist in the implementation of the OM&M, including with respect to the monitoring of the off-site soil gas probes installed between Tract 33410 and the southern perimeter of the landfill and performing any obligations of homeowners with respect to passive VIMS monitoring or active VIMS installation, operation, monitoring and maintenance as may be required hereunder that such homeowners fail to perform.

As noted in the Soil Vapor Declaration and the Community Declaration, owners of the homes with VIMS will have responsibilities including, but not limited to, general maintenance and inspection of the passive systems, notifying tenants and future owners of the existence of the VIMS, monitoring of the passive VIMS, if so required hereunder, and the installation, operation, monitoring and maintenance of any active VIMS.

RCDEH and the Santa Ana Regional Water Quality Control Board (SA-RWQCB) will be regularly updated on the progress of the OM&M as discussed in Sections 5.6.1 to 5.6.3 of this submittal. Overall, Pulte and its consultants and contractors will be responsible for the design, commissioning, and initial testing of the VIMS on the Tract. The Association will be responsible for implementing and reporting on certain long-term OM&M activities described in this Plan. Other than the periodic inspection and maintenance requirements described in Section 5.4, no long-term OM&M activities are proposed for the passive systems installed on the homes following their commissioning unless VOC soil gas levels are detected in the off-site soil gas probes installed between Tract 33410 and the southern perimeter of the landfill at concentrations exceeding thresholds agreed to in advance with RCDEH, as discussed in Section 5.6 of this Plan. The monitoring protocol, as well as a discussion of the responsible entity(s) making the



determination as to what additional OM&M activities may be required, is also discussed in Section 5.6 of this Plan.

**4.0 Vapor Intrusion Mitigation System:** The proposed VIMS improvements are provided in a plan and specification set prepared by GeoKinetics dated March 4, 2021 (Attachment A). As indicated earlier, the VIMS plans were prepared to prevent any significant migration of soil gas to the interior areas of residential buildings that will be constructed in the Tract. Descriptions of the passive VIMS are provided below.

**4.1 Passive VIMS Systems:** The proposed passive VIMS improvements include an engineered vapor barrier beneath the floor slab of the homes. The specified vapor barrier consists of a Liquid Boot multi-layer composite membrane that includes an upper protection course (UltraShield G-1000), an intermediate 40-mil spray-applied chloroprene modified asphalt core (Liquid Boot 500), and a lower 20-mil polyethylene-EVOH film (Liquid Boot VI-20). This membrane system is shown in Detail A on Sheet D-1 of the attached plan set.

The passive VIMS also includes passive sub-slab vent piping beneath the vapor barrier. The ventilation system consists of a 2" layer of sand with a series of embedded 12" wide by 1" high low profile perforated vent lines. The vent lines will be connected to non-perforated vent risers that will extend to outlets at the roof level of the buildings. As indicated on the VIMS plans, placards will be provided on the vent risers to identify their function. Non-restrictive caps will be installed at the vent riser outlets to prevent rain from entering the pipe. The sub-barrier vent system is designed to prevent significant pressure differentials from developing between the sub-barrier sand blanket and the interior of the building.

Soil gas monitoring probes will be provided in the sub-barrier sand blanket for all passive VIMS to provide a means of monitoring sub-slab pressures and sub-slab soil gas concentrations, as needed. Probe locations and details are provided on the VIMS plans for the Tract. The gas probes will terminate in quick-connect fittings that will be housed in an enclosure installed at the edge of the slab of each residence. Utility trench dams and conduit seals will also be provided to reduce the possibility of soil gas following the utility trenches or conduits from adjacent sites up to and under the building.

The vapor barrier system will be inspected and tested as part of the VIMS certification process to confirm it is functioning as intended and providing a level of protection that meets or exceeds the degree of enhanced

protection needed. The VIMS commissioning (i.e., testing and certification) protocol is discussed in Section 5.0 of this Plan. Once the VIMS system has passed the final inspection, and the additional confirmatory testing described in this Plan has been successfully completed, a certification letter will be issued by a California Registered Professional Engineer qualified in the design of vapor mitigation systems ("**Qualified Consultant**") to confirm that the system (1) was installed in accordance with the approved plans and specifications; and (2) is functioning as intended and as necessary to be protective of the building occupants.

GeoKinetics has designed and installed the type of VIMS improvements that are described in this submittal at many buildings to date across California. In each case the system has performed as intended and provided a high level of protection to the building occupants.

**4.2 Future Active VIMS System Component Conversion Details:** As indicated earlier, the VIMS have been designed such that they can be converted to an active mitigation system (i.e., sub-slab depressurization (SSD) systems) if required at a future date. Conversion to an active system would include the installation of a Fantech RN2 in-line blower on one of the vent risers (VR-1) so that the system can be operated in a SSD mode. The blower would pull air from the sub-slab vent system, while fresh air would enter the system through the passive vent riser. A Dwyer Series 1900 Pressure Switch would also be installed below the blower inlet which would measure the flow pressure from the blower installation. In the event that the blower does not provide the required pressure (blower failure or vent riser obstruction), an operational light mounted on the outside of the home will be deactivated. None of these active system components are currently proposed to be installed on the homes in the Tract. Pulte will install a doghouse enclosure at VR-1 as shown on the plan set. In addition, Pulte will provide a dedicated 120 volt AC outlet in the doghouse for powering a future blower and pressure switch. Pulte will also provide an electrical box at the front of the house as well as conduit routed from the box to the doghouse for the future notification light. The installation of the blower, the pressure switch and the notification light will be the responsibility of the homeowner in the unlikely event that those components are requested or required hereunder, and the homeowner will thereafter be responsible for the maintenance, repair and monitoring of any such active VIMS. To the extent that any homeowner is required to install, maintain, repair and monitor an active VIMS and such homeowner fails to do so, the Association will have the responsible to perform such activity pursuant to the terms of the Community Declaration. A manual for the installation of these active components is provided as Attachment B. The conversion to an active system would only

be potentially necessary if long term monitoring of the landfill perimeter probes discussed below indicated that elevated soil gas VOC levels (exceeding thresholds agreed to in advance with RCDEH) exist at the landfill, leading to potentially increased soil gas VOC levels under the homes within the Tract. As indicated earlier, the monitoring protocol, as well as a discussion of the responsible entity(s) making the determination as to what additional OM&M activities may be required, is discussed in Section 5.6 of this Plan.

## **5.0 Inspection, Operation and Maintenance Activities (Passive VIMS):**

Detailed inspection, operation and maintenance protocols have been prepared to ensure that the passive VIMS is installed and continues to operate as designed. The passive VIMS inspection, operation and maintenance activities are as follows.

### **5.1 Construction Inspection, Observation, Testing & Certification (Passive VIMS):**

Improper installation and/or construction-related damage to the vapor barriers could reduce their effectiveness. Precautionary measures will therefore be taken at the time of construction to ensure the VIMS systems are installed properly and the vapor barriers are undamaged. The approved VIMS plans specify that rigorous inspection, certification, and testing activities be performed during the installation of the systems. The Qualified Consultant and/or his designee will perform inspections during the installation of the systems. At a minimum these will include:

1. Inspection and approval of the construction materials, such as horizontal vent piping, vapor barrier materials, sand vent layer material, vent riser materials, placards, labels, etc., prior to the start of installation. Inspection of the prepared subgrade will also be performed prior to the start of the vapor mitigation system installation.
2. Inspection and approval of the sub-slab ventilation system prior to the installation of the primary sub-slab vapor barrier.
3. Inspection, testing, and approval of the primary vapor barrier prior to placement of the concrete for the floor slab. Smoke testing of the primary vapor barrier and vent piping system will be performed by the construction contractor (who will be hired by Pulte) and observed by the Qualified Consultant to confirm the connectivity/functionality of the sub-slab sand

blanket and vent piping and the integrity/continuity of the vapor barrier. The Smoke Testing Procedures will follow the standard GeoKinetics' protocol set forth in Attachment C. Any pinholes, perforations, or leaking seams will be identified, repaired, and re-tested. Repairs to the barrier will be performed per Cetco Liquid Boot protocol as outlined in Sheet 2, Section III of the plan set. Placement of the foundation/floor slab concrete will not take place until the membrane has been approved and certified by the Qualified Consultant.

4. Inspection, testing, and approval of the above-ground vent riser system.
5. Verification of the installations of the doghouse, the 120 volt AC dedicated power outlet and the trouble light electrical box / conduit installations as described in Section 4.2.

The measures outlined above reduce the potential for any significant damage to the vapor barrier or ventilation components during the construction process. At the successful completion of an installation to the satisfaction of the Qualified Consultant, the system will be certified by that engineer. The results of the construction observation, testing, certification and the post-construction sampling activities described in this submittal will be presented in a VIMS certification report that will be submitted to the RCDEH, RCDWR, and the SA-RWQCB [herein referred to as the "Agencies"] at the completion of construction. Documentation of the successful installation and certification of the VIMS will be required prior to the issuance of a certificate of occupancy for the buildings.

**5.2 Initial Verification Testing Protocol (Passive VIMS):** As an additional precautionary measure, post-construction testing is proposed to confirm the effective soil gas-to-indoor air attenuation rate for the completed vapor barrier installation. Sub-barrier soil gas samples and interior air samples can be collected and analyzed for VOCs to establish the relative ratios of those compounds. However, it has been our experience that the collection of interior air samples to confirm that significant quantities of VOCs are not migrating from the subsurface to the interior of a building has a high risk of yielding inconclusive or misleading results. This is because (1) there are typically many sources of VOCs in the interior of a building - particularly a new building; and (2) there are typically a number of VOCs that are present at background levels in the ambient air exterior to a building (References 1, 4, 8, 15, 20, 26, 27, and 31). The VOCs that



are present in the outdoor air will also be present at some level in the indoor air. VOCs are almost universally found in the indoor air of buildings - including those at sites where there is no subsurface contamination. Due to the typical presence of indoor and outdoor air (background) VOC sources, it should not be assumed that VOCs detected in indoor air samples originate from vapor intrusion.

We have found that the measurement of the concentrations of radon gas beneath the vapor barrier and in the indoor air of a building provides a more reliable means of evaluating the soil gas-to-indoor air attenuation factor that is associated with a passive barrier system immediately following building construction. Radon is a naturally-occurring gas that is present in the subsurface at detectable levels at most locations. It is generally not found in building materials so there are few, if any, potential sources of radon gas on the interiors of buildings. Radon is not sorbed onto soil or building materials so it can serve as a conservative tracer. The concentration of radon gas can be quantified easily, reliably, and relatively inexpensively. This approach resolves issues in evaluating attenuation such as the presence of VOCs due to background or indoor sources. The California Department of Toxic Substances Control (DTSC) has noted that, "*naturally-occurring radon can also be used to determine a building-specific attenuation factor*" in its Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011). For these reasons, post-construction radon gas measurements are proposed to assess the soil gas-to-indoor air attenuation factor for each building.

The concentrations of radon in the soil gas beneath each building, in the indoor air, and in the outdoor air will be measured using DurrIDGE RAD7 Electronic Radon Detectors. This instrument detects alpha particles associated with the natural decay of radon gas isotopes. Radon-222 is the most plentiful isotope with a half-life of approximately 3.8 days. Since radon gas concentrations can vary to some degree over time, the sub-slab soil gas and indoor/outdoor air samples will be collected through the detector for a period of approximately 24-hours in order to obtain representative average concentrations with a high confidence level. The interior doors to the units where the samples will be collected will be opened and the exterior windows and doors will be closed. For units with operational HVAC systems, the thermostats will be set to heat at 65 degrees and cool at 72 degrees Fahrenheit. The indoor radon samples will be collected from as close to the center of the unit as possible. The RAD7 units will be programmed to output the radon concentrations detected over 5-minute intervals. The effective attenuation factor (and attenuation rate) will then be estimated using the average measured radon concentrations.

Radon gas testing provides a means of confirming the absence of, or quantifying the impact of, any construction-related damage to the vapor barrier system. A target effective building attenuation rate of 5,000 (soil gas-to-indoor air attenuation factor of  $1/5,000$  or 0.0002) has been proposed for design purposes as the performance goal for systems with the sub-barrier ventilation operating passively. This attenuation rate would be highly protective of the building occupants under the current site conditions. A lower attenuation rate may be acceptable based on the soil gas VOC concentrations that are present at the completion of construction. The measured building attenuation rate will be evaluated and addressed with respect to the level of protection that is provided in the final building certification report.

**5.3 Land Use Covenants (Passive VIMS):** Pulte will prepare a Soil Vapor Declaration for each home buyer which is a Declaration of Covenants, Conditions, and Restrictions regarding the soil vapor mitigation and includes prescribed notifications, prohibitions, and controls that are needed for each affected property. It will also explain that the limitations, restrictions, covenants, and conditions run with the land and are binding to every individual who owns the affected property in the future. The Soil Vapor Declaration will encumber the affected property in addition to the Community Declaration.

**5.4 Inspection & Maintenance Requirements (Passive VIMS):** Under normal circumstances, most of the passive VIMS components will be maintenance-free. However, the accessible components of the system shall be inspected by the homeowner and / or the homeowner's environmental consultant on an annual basis to ensure they are undamaged and operational. These activities shall include visual inspection of the vent pipe riser outlets in order to ensure they are open and unobstructed - as well as to identify any apparent deterioration that could potentially hinder the operation of the system. Any problems shall be documented and repaired as soon as possible by a Qualified Consultant. Any labeling or placards installed for the original system that are no longer legible shall be replaced by a Qualified Consultant.

Similar inspections shall also be performed by the homeowner and/or the homeowner's environmental consultant in conjunction with any building alterations or construction activities and after any significant seismic event at the Site. A significant seismic event is considered to be any earthquake that produces a level of shaking of VI or higher at the subject property in accordance with the Modified Mercalli Intensity Scale.

**5.5 Post-Construction Modifications and Restrictions Relating to New Structures (Passive VIMS):** The Soil Vapor Declaration imposes restrictions with respect to any work that could penetrate or disturb any component of the VIMS, concrete floor slabs, and/or foundations. Modification of any portions of the VIMS is prohibited and any building modifications that require the penetration or removal of the slab beneath the home are also prohibited. The slab beneath the home shall not be modified or penetrated due to the potential for damage to the existing vapor barrier / venting system. The two 2" vapor vent risers located within the walls and roof of the home shall not be re-located, modified, cut or capped as that will impede the effectiveness of the VIMS. In addition, any additions or modifications to the residences which include or create new enclosed space (i.e. not open-air), and any new enclosed structures (guest houses, casitas, etc.) constructed on or within any lot must incorporate a vapor mitigation system whose design has been approved, in advance and in writing, by the RCDEH. All such improvements shall also remain subject to the requirements of the Community Declaration, including without limitation the requirements set forth in **Article 8** (Design Review).

**5.6 Periodic / Long Term Monitoring (Passive VIMS):** The homeowners (or their environmental consultant) are responsible for performing routine maintenance/repair of the passive VIMS. As indicated earlier, the Association will also be responsible for implementing and reporting on the long-term OM&M activities in this Plan. A summary of the quarterly, yearly and five-year monitoring / reporting is provided in the following sections.

**5.6.1 Periodic / Long Term Monitoring:** As indicated earlier, other than the periodic inspection and maintenance requirements described in Section 5.4, no long-term OM&M activities are proposed for the passive systems on site. Since RCDEH has not ruled out the adjacent landfill as a potential source of the VOCs detected in site soil gas, monitoring of the landfill boundary conditions is being proposed. Based on discussions with the RCDWR, seventeen (17) soil gas probes are proposed to be installed by RCDWR between Tract 33410 and the southern perimeter of the landfill. The approximate locations of these probes are shown on Figure 2. Based on the current plan, the probes are to be installed at depths ranging from approximately 10 to 30 feet bgs, or hard drilling refusal, whichever depth is shallower. The RCDWR is installing the probes for landfill regulatory compliance purposes and shall allow Pulte (and the Association) to utilize the probes for the monitoring purposes described in this OM&M Plan. It is proposed that Pulte will monitor

the soil gas probes for VOCs on a quarterly basis until the Association is formed and takes over monitoring. Quarterly monitoring will be performed for the first year, and thereafter may be reduced in frequency based on the accumulated data to no less than once a year. Pulte (or the Association when formed) will sample the soil gas in the 17 probes, review the results of the RCDWR groundwater sampling events (if any) and provide a short summary report for the site after each event. The report will provide the soil gas VOC results, and provide a subsequent recommendation as to the protectiveness of the passive VIMS systems on Site. In the unlikely event that the proposed soil gas probes are not installed, or at some time in the future, become inaccessible / damaged / removed, then the RCDWR will install replacement probes of similar design between Tract 33410 and the southern perimeter of the landfill in the current off-site location. However, if at some point in the future, RCDWR is no longer obligated to conduct sampling of the probes for purposes of landfill regulatory compliance, the Association shall be responsible for any necessary repairs and/or replacement of the probes in order to meet the sampling requirement described in this OM&M Plan.

RCDWR has granted Pulte (and the Association) access to monitor, maintain and install (if necessary) the planned soil gas probes and any future probes. The Right of Entry Agreement is attached as Attachment D. The first sampling event will serve as a baseline summary of the landfill boundary conditions. In the unlikely event that soil gas levels detected in the soil gas probes during subsequent sampling events exceed thresholds agreed to in advance with RCDEH, or are found to be significantly increasing, then the consultant will provide additional recommendations for the passive VIMS on site. Such recommendations may include the following:

1. Continued, or more frequent monitoring of the seventeen (17) off-site soil gas probes;
2. If continued, or more frequent monitoring of the off-site soil gas probes indicates that soil gas levels remain above thresholds agreed to in advance with RCDEH, or are found to be increasing, then the consultant may recommend an initial round of monitoring of the sub-barrier probes on some, or all of the homes on site. These initial VOC levels will be used as a baseline for future monitoring events. It should be noted that elevated VOC levels below the slabs



of the homes is not an indicator that the VIMS systems are ineffective. The VOC levels will only be used to determine if soil gas levels are increasing on site. If some or all of the homes on site are required to be monitored, the homeowner of each such impacted home shall be responsible for performing such monitoring activities, provided that under the terms of the Community Declaration, to the extent that a homeowner fails to perform such obligation, the Association shall perform such obligation, subject to the rights and remedies of the Association under the Community Declaration.

3. If elevated VOC levels below some of the homes are determined to be increasing, or of significant concern, then the conversion of those homes to an active system may be recommended. If any such active VIMS are required hereunder, the homeowners of the impacted homes shall be responsible for the installation, maintenance, repair and monitoring of such active VIMS, provided that under the terms of the Community Declaration, to the extent that a homeowner fails to perform such obligations, the Association shall perform such obligations, subject to the rights and remedies of the Association under the Community Declaration.
4. If the VIMS is converted to an active system, the homeowner will be obligated to periodically monitor the operation light of the active VIMS on the exterior of their home. If the homeowner observes that the operational light is not illuminated, then they will be expected to contact the Association promptly for assistance, provided that the homeowner will remain obligated to undertake and complete any necessary repair or replacement of any portion of the active VIMS. According to the manufacturer, the Fantech RN2 blowers used in the active VIMS are designed to provide trouble free operation, with an expected lifetime of approximately 10 years. If an operational light is not illuminated, the problem should be promptly investigated and addressed so that the system can be returned to its original condition in a timely manner. The homeowner should expect to have the blower replaced as a part of a standard maintenance program once the blower expected lifetime is reached.

As discussed in Section 5.6.2, every five years, the Association will prepare and submit to the Agencies a more detailed annual report that will include a more detailed evaluation of mitigation system performance, whether any modifications to the OM&M should be made, and whether groundwater remedial action activities performed by the RCDWR, under the oversight of the SA-RWQCB, have resulted in the reduction in VOC concentrations in groundwater in the vicinity of the Tract such that future long term monitoring can be possibly terminated.

If any of the passive VIMS are converted to active systems in the future, revisions to this Plan may be required or requested by the Agencies and the Association will be responsible for preparing any necessary revisions to the Plan. At a minimum, all installation, maintenance, monitoring and repairs of any future active systems would be the responsibility of the homeowners. However, to the extent that a homeowner fails to perform such obligations, the Association shall perform such obligations, subject to the rights and remedies of the Association under the Community Declaration. It should also be noted that the periodic visual inspections can be reduced/eliminated once the groundwater contamination and/or perimeter soil gas<sup>2</sup> concentrations have been reduced/eliminated to the satisfaction of the Agencies.

Please note that RCDEH can also request the collection of sub-slab soil gas samples and analyses for VOCs based upon the results of the inspection checks or Pulte / Association soil gas sampling results. If requested, the homeowner of each such impacted home shall be responsible for performing such sampling and analyses activities, provided that under the terms of the Community Declaration, to the extent that a homeowner fails to perform such obligation, the Association shall perform such obligation, subject to the rights and remedies of the Association under the Community Declaration.

Nothing in this Section 5.6.1 shall limit the authority of RCDEH to require additional investigation or mitigation measures by the Association or by RCDWR in the event that new data requires such action to protect human health or the environment. To the extent that any future monitoring equipment, including any future soil gas probes, are required to be installed on the Site, all reasonable

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<sup>2</sup> In the event that VOC concentrations in groundwater in the vicinity of the Tract decrease to levels that do not present an unacceptable vapor intrusion risk to residents, a request will be made to the Agencies to eliminate the landfill perimeter probe monitoring condition.

efforts will be made to locate such equipment in streets, common areas, or other areas outside the residential lot boundaries.

**5.6.2 Five-Year Review:** Every five years, a more detailed annual report will be prepared and submitted to the Agencies by the Association. This review report will provide a review of the overall systems' performance and make recommendations, if needed, to the Agencies for any changes to OM&M activities. The purpose of the review is to discuss whether the passive VIMS:

1. Remain protective of human health;
2. Function as designed;
3. Are maintained appropriately by O&M activities;
4. Are sufficient as installed and that all future OM&M activities can be reduced or terminated due to the beneficial results of groundwater remedial activities performed by the RCDWR and/or based on review of soil gas data.

The first Five-Year Review report will be issued five years from the completion of construction, and all subsequent inspections will be completed every fifth year. The Five-Year Review report will identify and review completion of any required repairs, changes in site conditions or usage, or any other significant information relating to the VIMS that may have taken place over the previous five years. Additionally, the Five-Year Review report will evaluate if the landfill perimeter monitoring remains adequate, or if that monitoring could be either eliminated or scaled back. The Five-Year Review report will be prepared by the Association and submitted to RCDEH. A copy of the Report will be provided to the SA-RWQCB.

**5.6.3 Termination of VIMS OM&M:** Each five-year review will include a summary of the soil gas monitoring events for the 17 perimeter probes performed by Pulte / Association and the groundwater sampling and groundwater remedial activities performed by RCDWR during the reporting period. This review will also provide any needed recommendations regarding future OM&M of the systems, and whether modification and/or termination of the VIMS OM&M program is feasible. The five-year review may also recommend the collection of sub-slab soil gas samples and analyses for VOCs (as a line of evidence) to support termination

of site monitoring should the groundwater sampling results and groundwater remedial activities performed by RCDWR indicate no unacceptable risk to human health via vapor intrusion. If recommended, the homeowner of each such impacted home shall be responsible for performing such sampling and analyses activities, provided that under the terms of the Community Declaration, to the extent that a homeowner fails to perform such obligation, the Association shall perform such obligation, subject to the rights and remedies of the Association under the Community Declaration. It is anticipated that RCDWR will be responsible for closure and removal/abandonment of the landfill perimeter probes once it is determined that monitoring of the probes by RCDWR, Pulte, and the Association, is no longer required. Any modification or termination of the monitoring outlined in this Plan would need to be approved by the Agencies.

**5.6.4 Contingency Planning:** As described earlier, VIMS measures are incorporated into the foundation design of the residential buildings within the Tract. Response actions, such as repairs, or system modifications could be necessary if the VIMS becomes damaged or ineffective. Such events will initiate immediate actions to inspect the system and repair the system as needed. VIMS maintenance and routine monitoring provisions are provided in Sections 5.4 of this Plan. The owner of a residence with a VIMS that becomes damaged or ineffective shall be responsible for the repair of such system, including any active system components.

**5.6.5 Financial Assurance Planning:** No significant costs are required to maintain the passive VIMS systems on site. As indicated earlier, the homeowners are responsible for the monitoring and maintenance of the VIMS. Pulte is forming the Association to contract with GeoKinetics or equal to provide the long-term monitoring identified herein. Property management services will be provided by a professional management company to support the Association and issue contracts, provide accounting services, and management support on behalf of the Association.

The Association will have 3 to 5 directors that will be appointed at the time of formation, subject to the terms of the Community Declaration and the Association's other governing documents. The board of directors of the Association will be elected by its members and can appoint officers, provided that the directors may act as the officers of the Association if so appointed. The Association will remain active until at least such

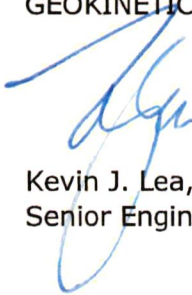


time as the landfill-related groundwater in the vicinity of the Tract has been adequately remediated to eliminate the potential for future unacceptable vapor intrusion risk from groundwater. Once the groundwater has been adequately remediated, on-going landfill perimeter monitoring / reporting will no longer be warranted or required under this OM&M Plan.


**6.0 Closing:** Nothing in this OM&M Plan is intended to prevent a homeowner or the Association from performing any supplemental inspections, testing, or monitoring that it may deem necessary, or that the Qualified Consultant recommends, to confirm the VIMS is functioning as intended. This OM&M Plan has been prepared in accordance with generally accepted guidelines and procedures. It is consistent with the standard of practice with respect to the monitoring and maintenance of vapor mitigation improvements. The operation, monitoring, and maintenance procedures set forth herein will ensure that the VIMS remain effective and continues to function as intended in the design documents.

If you have any questions regarding this OM&M Plan, please contact either of the undersigned.

Sincerely,  
GEOKINETICS, INC.

  
Kevin J. Lea, RCE  
Senior Engineer



  
Geoffrey D. Stokes, PG/CEG  
Senior Geologist



### **Selected References**

1. *Individual Volatile Organic Compound Prevalence and Concentrations in 56 Buildings of the Building Assessment Survey and Evaluation (Base) Study* by JR Girman, et al. dated 1999.
2. *A Comparison of Hydrocarbon Vapor Attenuation in the Field with Predictions from Vapor Diffusion Models* by G. Todd Ririe, et al. dated 2002.
3. *The MTRANS Methane Gas Migration Model - Methane Geotechnical Working Group* prepared for Building Industry Association by Glenn Tofani, Hassan Amini, Gordon Alexander, Marlaigne Hudnall, and Brian Villalobas dated June 2002.
4. *Volatile Organic Compounds in Indoor Air: A Review of Concentrations Measured in North America Since 1990* by Alfred T. Hodgson and Hal Levin dated April 21, 2003.
5. *Comparison of Personal, Indoor, and Outdoor Exposures to Hazardous Air Pollutants in Three Urban Communities* by Ken Sexton, et al. dated December 12, 2003.
6. *Results of Solvent Diffusion Tests on Liquid Boot<sup>®</sup> Membranes* by Glenn Tofani dated November 2004.
7. RM Environmental, Inc., Report of Findings, Installation and Sampling of Six Soil-Pore Gas Probes, 45.5+/- Acres, Box Springs Development, Adjacent to the Closed Highgrove Landfill, Highgrove Area of Riverside County, California, dated April 8, 2005.
8. *Indoor Air Pollution in California* by California Air Resources Board dated July 2005.
9. *Results of Benzene Diffusion Tests for Liquid Boot<sup>®</sup> Membranes* by Glenn Tofani dated October 2005.
10. *Lateral Gas Permeability Testing for Ultrashield G-1000 Geofabric* by Glenn Tofani dated December 2006.
11. *Transmission of Methane Gas and VOC Vapors Through Membranes* by Glenn Tofani dated February 2007.
12. *Results of Chemical Exposure Testing for Cetco Waterproofing Materials* by Glenn Tofani dated March 2008.
13. *Chemical Compatibility of Liquid Boot<sup>®</sup> Membranes With Respect to Vapor Barrier*

*Applications* by Glenn Tofani dated April 2008.

14. *Estimation of Vapor Migration Rates to Building Interiors* by Glenn Tofani, et al. presented at the Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds dated May 2008.
15. *Volatile Organic Compound Concentrations and Emission Rates in New Manufactured and Site-Built Homes* by A. Rudd, A.T. Hodgson, D. Beal, and S. Chandra dated 2008.
16. *Common Questions and Answers Regarding the Use of Sub-Slab Membranes for VOC Mitigation* by Glenn Tofani dated January 2009.
17. *Results of Diffusion Tests on Polyethylene and Liquid Boot<sup>®</sup> Membranes* by Glenn Tofani for Dow Chemical Ltd. dated March 2009.
18. *Chemical Compatibility of Liquid Boot<sup>®</sup> Membranes With Respect to Vapor Barrier Applications* by Glenn Tofani dated May 2009.
19. *Results of Solvent Diffusion Tests on LB-500 Membranes* by Glenn Tofani dated December 2009.
20. *Residential Indoor Air Concentrations of Common Volatile Organic Compounds* by T.R. Kline and N. Goers dated 2009.
21. *Performance Monitoring of VOC Mitigation Systems* by Glenn Tofani and Kevin Lea presented at the Seventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds dated May 2010.
22. *Detailed Indoor Air Characterization and Interior Source Identification by Portable GC/MS* by Erik Dettenmaier and Kyle A. Gorder dated September 30, 2010.
23. *Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation and Management* by The Interstate Technology & Regulatory Council dated October 2010.
24. *Evidence for Increasing Indoor Sources of 1,2-Dichloroethane Since 2004 at Two Colorado Residential Vapor Intrusion Sites* by J.P. Kurtz, et al. dated 2010.
25. *Emissions of 1,2-Dichloroethane from Holiday Decorations as a Source of Indoor Air Contamination* by W.J. Doucette, A.J. Hall, and K.A. Gorder dated 2010.
26. *Background Levels of Volatile Organic Chemicals in Homes: A Review of Recent Literature* by New Jersey Department of Environmental Protection dated 2010.

27. *Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990 - 2005): A Compilation of Statistics for Assessing Vapor Intrusion* by U.S. EPA dated June 2011.
28. *Results of Solvent Diffusion Tests for GeoSeal Membranes* by Glenn Tofani dated August 2011.
29. *DTSC Vapor Intrusion Mitigation Advisory, Revision 1, October 2011*
30. *EPA's Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings* by the U.S. Environmental Protection Agency dated March 16, 2012.
31. *Typical Indoor Air Concentrations of Volatile Organic Compounds in Non-Smoking Montana Residence Not Impacted by Vapor Intrusion* by Montana Department of Environmental Quality dated August 2012.
32. *Lessons-Learned from Four Years of Intensive Monitoring of a House over a Dilute Chlorinated Hydrocarbon Plume* by Kyle Gorder and Erik Dettenmaier dated March 2014.
33. *A Rational Approach to Methane Hazard Assessment* by John Sepich and Stephen Marsh dated 2014.
34. *Source Apportionment of Indoor and Outdoor Volatile Organic Compounds at Homes in Edmonton, Canada* by Md. Aynul Bari, et al. dated March 28, 2015.
35. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion pathway from Subsurface Vapor Sources to Indoor Air* by U.S. Environmental Protection Agency dated June 2015.
36. *Results of Solvent Diffusion Tests for GeoSeal / Epro System III Membranes* by Glenn Tofani dated August 2016.
37. *Volatile Organic Compounds (VOC) Criteria for New Construction - White Paper* by the American Industrial Hygiene Association dated March 15, 2017.
38. *Household Products Database: Tetrachloroethylene* by U.S. Department of Health & Human Services dated September 2017.
39. *Leighton and Associates, Inc, Limited Phase II ESA, Tentative Tract 33410, Highgrove, Riverside County, California 92557*, dated September, 2019



40. GeoTek, Inc., Response to Review Comments, Tract No. 33410, Highgrove Area of Riverside County, California, dated February 26, 2020.
41. Roux Associates, Inc., Soil Vapor Investigation Report, Tract 33410, Highgrove, Riverside County, California 92557, dated August 18, 2020
42. Leighton and Associates, Inc, Letter of Opinion, Environmental Health Risk to Future Inhabitants, Tentative Tract 33410, Highgrove, Riverside County, California 92557, dated September 25, 2020
43. Roux Associates, Inc., VIMS Workplan, Tract 33410, Highgrove, Riverside County, California 92557, dated November 18, 2020.

{ E N D }



Not to Scale

**GeoKinetics**  
Geotechnical &  
Environmental Engineers

Project Name: Pulte - Tract 33410

Date: December 2022

**Site Location Map**  
Spring Mountain Ranch, Tract 33410  
Highgrove, California

Figure 1





#### Explanation

- Approximate Limits of Potential VOC Source (Highgrove Landfill) per Roux and Leighton
- Approximate Landfill Perimeter Soil Gas Sampling Probe Location

**GeoKinetics**  
Geotechnical &  
Environmental Engineers

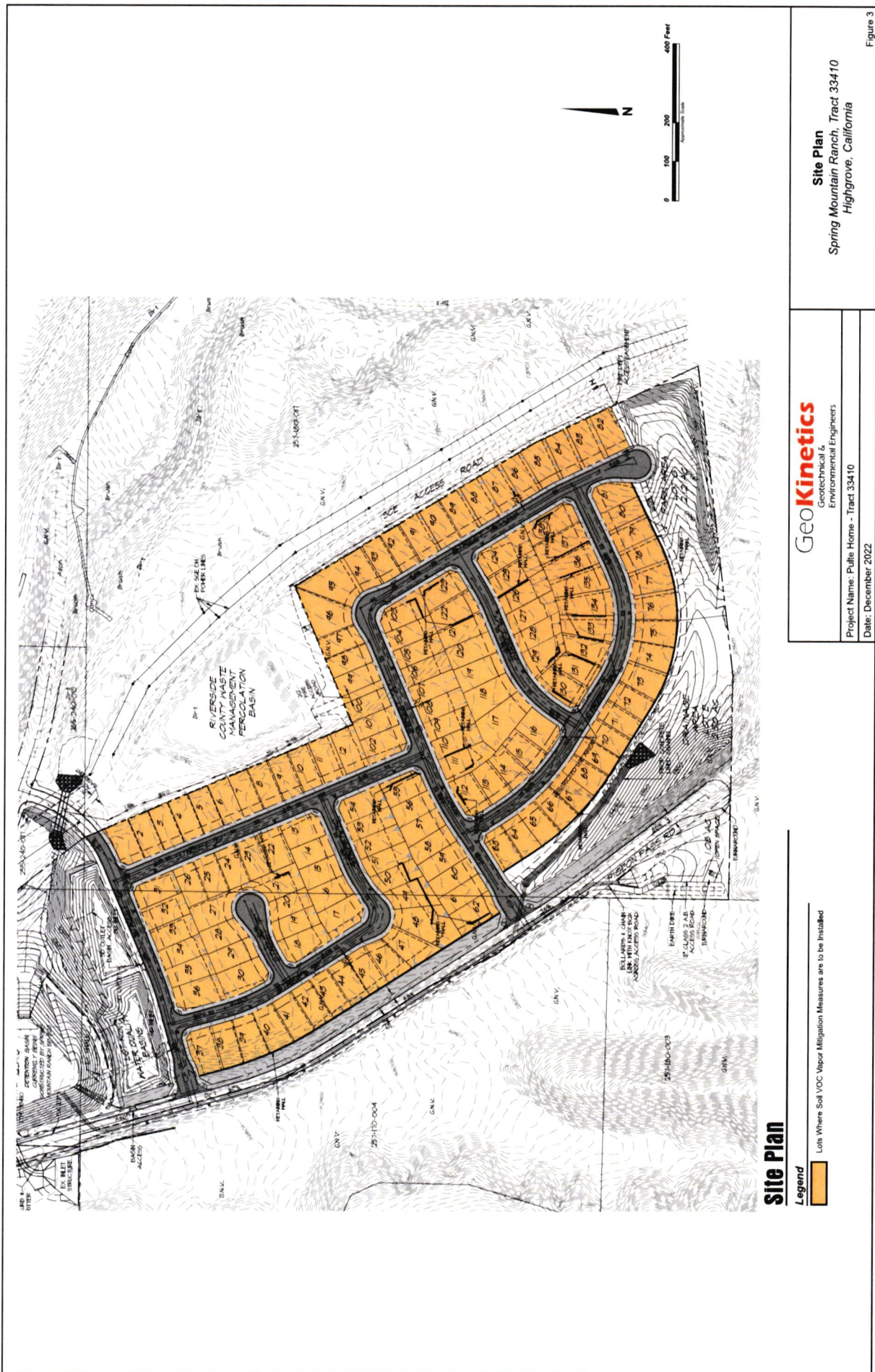
Project Name: Pulte - Tract 33410

Date: December 2022

**Site Plan**  
Spring Mountain Ranch, Tract 33410  
Highgrove, California

Figure 2





Site Plan

Legend

Orange box: Lots Where Soil VOC Vapor Mitigation Measures are to be Installed

GeoKinetics

Geotechnical & Environmental Engineers

Project Name: Pulte Home - Tract 33410

Date: December 2022

Site Plan  
Spring Mountain Ranch, Tract 33410  
Highgrove, California

Figure 3



# ***Attachment A***

## ***VIMS Plans***











---

**(1-Story)**

**(1-Story)**




**Legend**

- 
- The diagram illustrates a roof assembly cross-section with the following components and designations:
- Limits of Soil VOC Vapor Barrier**: Indicated by a yellow rectangular block.
  - Limits of Foundation / Pad Footing**: Indicated by an orange rectangular block.
  - 12" Wide Low Profile Vent Piping**: Indicated by a green rectangular block.
  - 12" Wide Low Profile Vent Piping with Sleeve Through Footing**: Indicated by a blue rectangular block.
  - 3" Dia. Solid ABS Vapor Vent Transition Piping/Sleeve**: Indicated by a purple rectangular block.
  - VR-1**: Vent Riser With Designation Extending Above Roof Level.
  - SB-1**: Sub-Slab Soil Vapor/Gas Sampling Probe Below Primary Vapor Barrier With Designation (See Detail W, Sheet D37).
  - SB**: Vapor/Gas Sampling Probe Below Primary Vapor Barrier (Sub-Breather Probe).
  - To Sampling Probe Monitoring Port**: Indicated by a blue line with an arrow pointing to the SB-1 probe.
  - Location of Doghouse for Optional Future Blower (If Needed)**: Indicated by a blue gear icon.
  - 10' Radius Clear From Any Roof Air Intakes**: Indicated by a dashed yellow circle with a radius of 10'.

**Note:** All Vent Piping and Riser Locations Should Be Coordinated With Architectural, Structural and Plumbing Plans Prior to Commencement of Work.

*Final Vent Stub-Up Locations Should be Coordinated with Site Superintendent for Position Within Wall Prior to Installation of Stab.*

Original Scale in Inches	0	1	2	3
for Reduced Plans	0	1	2	3

			 	
Date	By	Rev.	Description	
Revisions				

Pulte Homes - Compass &amp; Pinnacle at Summit Canyon - Box Springs, California

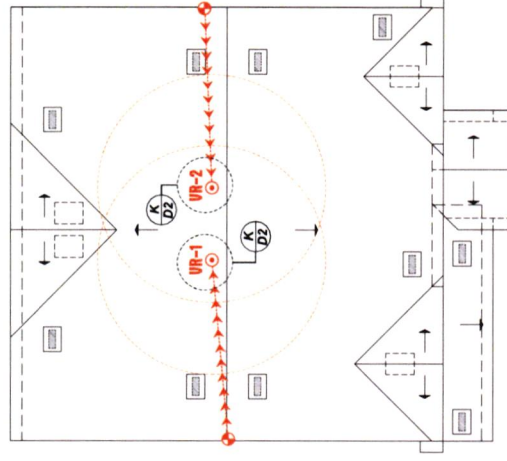
**Plan Type 2 (Bellwood)  
First Floor and Roof Plan**

Sheet 5

March 29, 2022







**Plan Type 4 (Pathmaker)**  
**Roof Plan**  
**(2-Story)**

- Original Scale in Inches  
for Reduced Plans

Rev.	Date	By	Rev.
1			
2			
3			

Confidential E-mail: Blower (M. Nienstedt)

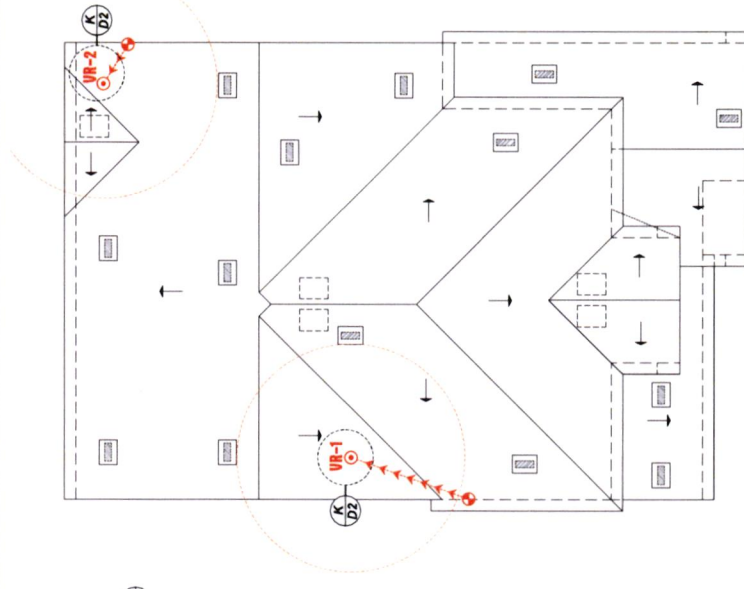
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姓名: 王明	学号: 123456	性别: 男	年龄: 18	民族: 汉族	籍贯: 山东	职业: 学生	联系电话: 13812345678	电子邮箱: 123456789@163.com	身份证号: 370601199801010001	住址: 山东省济南市历下区经二路123号	工作单位: 山东省实验中学	入党时间: 2018年10月	转正时间: 2019年12月	考核时间: 2020年12月	考核人: 王明	考核结果: 合格	考核日期: 2020年12月10日	考核地点: 山东省实验中学	考核人: 王明	考核结果: 合格	考核日期: 2020年12月10日	考核地点: 山东省实验中学
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Sheet 7







**Plan Type 6 (Pinewood)**  
**Roof Plan**

**GeoKinetics**  
Geotechnical & Environmental Engineers

77 Barstow  
Ave., CA 91301  
Tel 949 502 5371  
Fax 949 502 5371

Sheet 9





**A** *High Performance* *Not to Scale*



**G** **Not to Scale**



**1** Typical  
Not to Scale



### Typical Vapor Barrier Identification



**Typical V**

**THIS BUILDING IS PROTECTED WITH  
A VAPOR CONTROL BARRIER.  
ANY PROPOSED PENETRATION OR  
ALTERATION OF FLOOR SLAB  
REQUIRES NOTIFICATION OF THE  
BUILDING OFFICIAL AND INSPECTION  
BY A QUALIFIED ENGINEER**

This Notification is to be Permanently Stamped or Etched in the Surface of the Garage Slab at the Time it is Poured or a Placard Permanently Adhered to Completed Slab.

Location of Notification to be determined by Project Superintendent and Building Official

All Letters 1/2" (Min.) in Height

1 Required in Each Garage

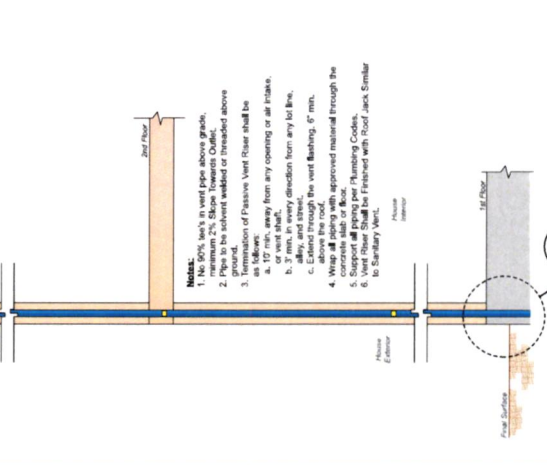
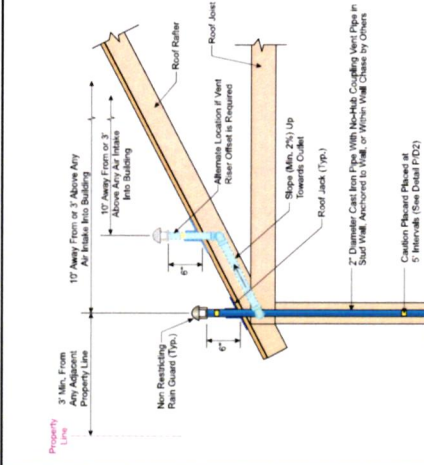
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**Notes:**  
Field Situations Not Specially Detailed Shall be Handled Per the Intent of These Plans and Specifications With the Approval of the Soil Vapor Engineer. The Applicator/Contractor May Submit Shop Drawings for Alternative Methods.  
See Structural Foundation Plans for Complete Depth and Details of Footings. Depths of Footings Shown are Generalized, Actual Footing Depths May Vary.

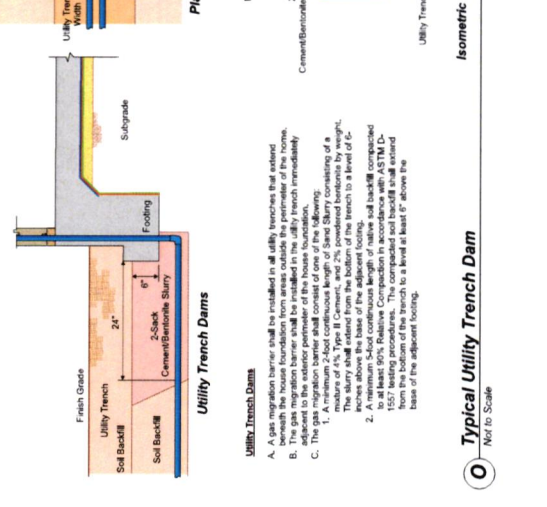
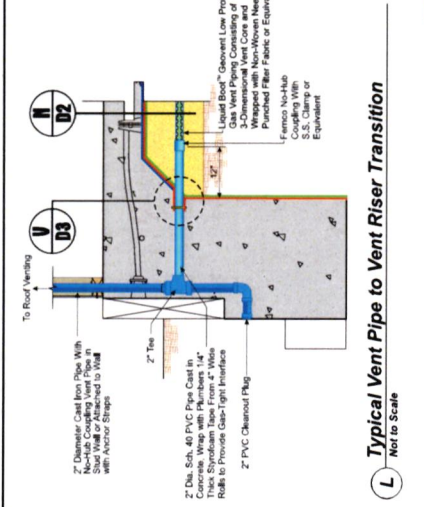
Pulte Homes - Compass &amp; Pinnacle at Summit Canyon - Box Springs, California

## Vapor Barrier and Vent Piping Details

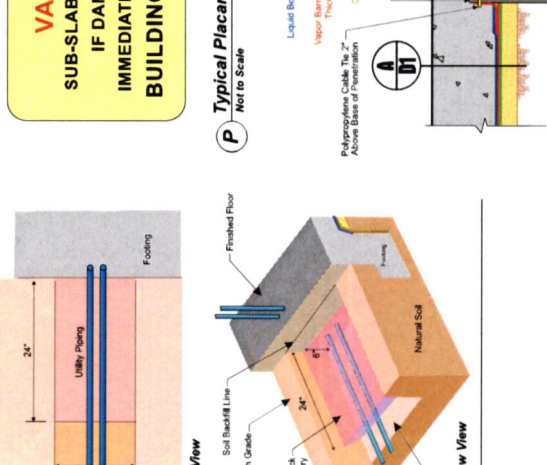
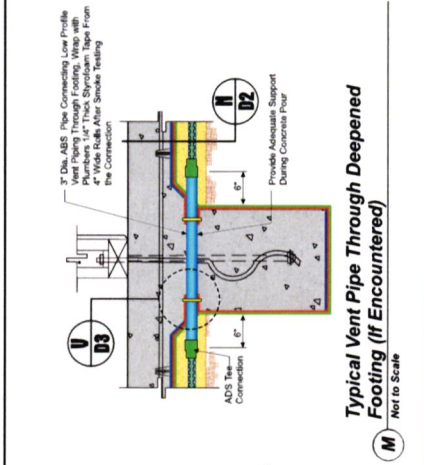
**Sheet D1**  
*March 29, 2022*



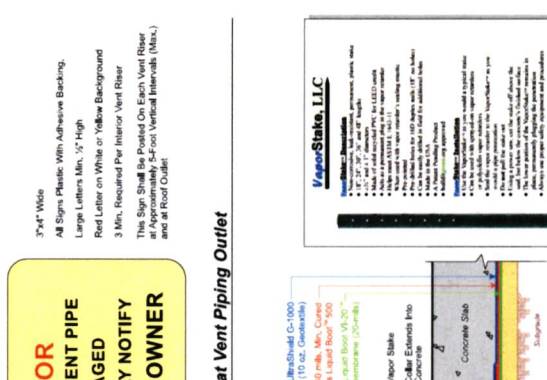
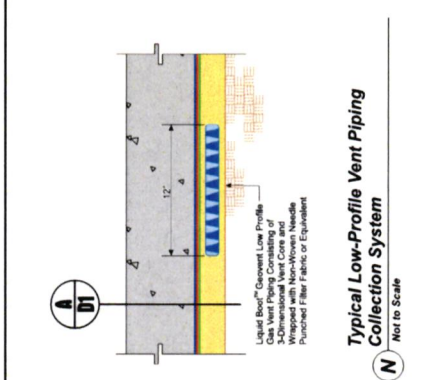
**K Typical Vent Riser to Roof Transition**  
Not to Scale



**L Typical Vent Pipe to Vent Riser Transition**  
Not to Scale



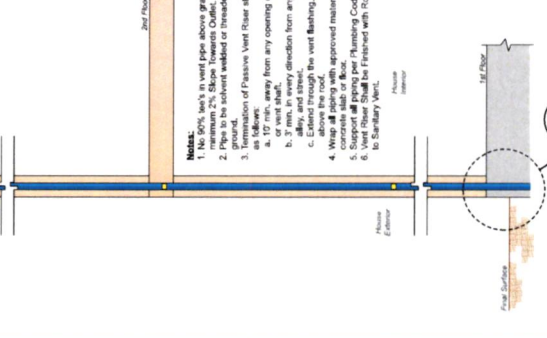
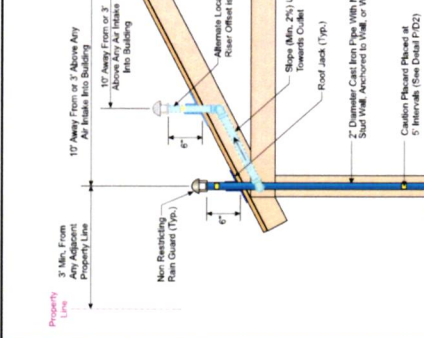
**M Typical Vent Pipe Through Deepened Footing (if Encountered)**  
Not to Scale



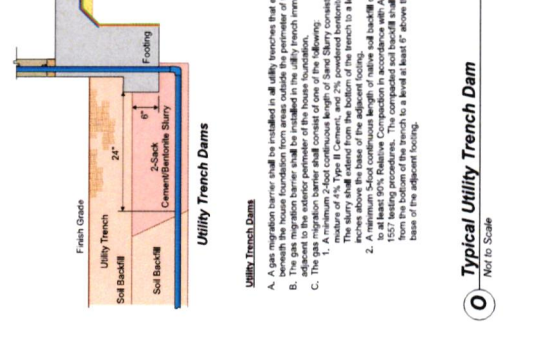
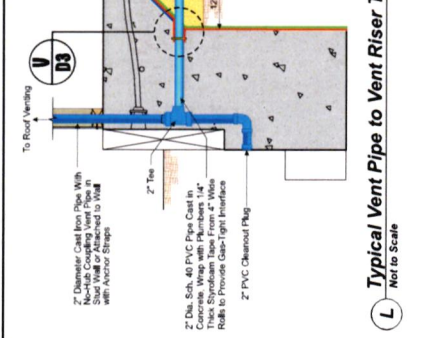
**N Typical Low-Profile Vent Piping Collection System**  
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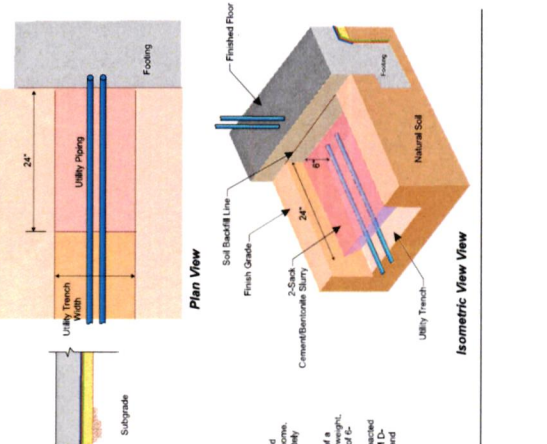
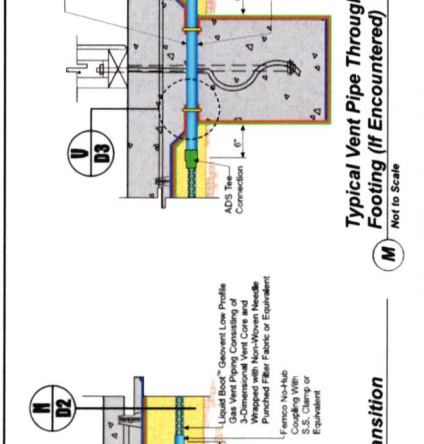
**O Typical Utility Trench Dam**  
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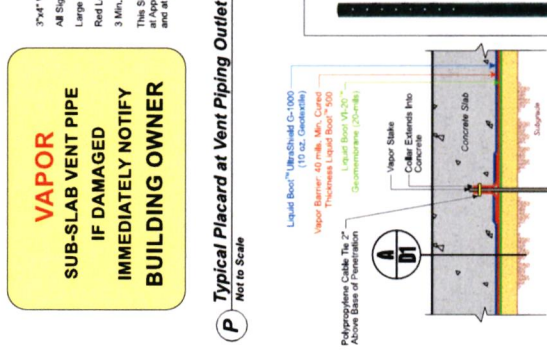
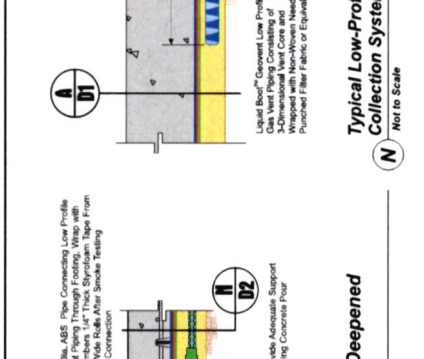
**P Typical Placard at Vent Piping Outlet**  
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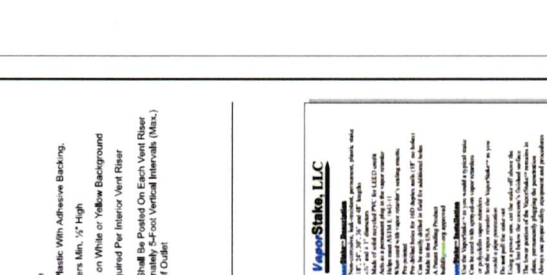
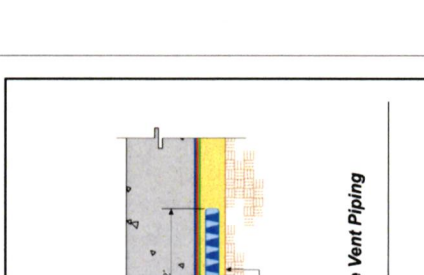
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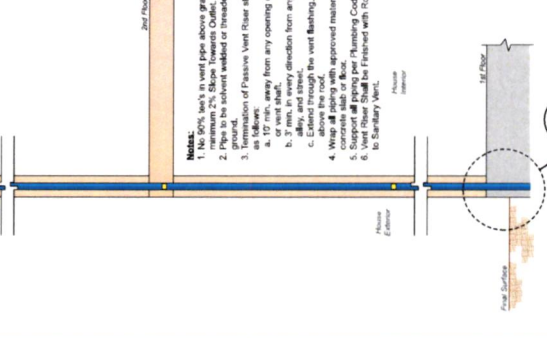
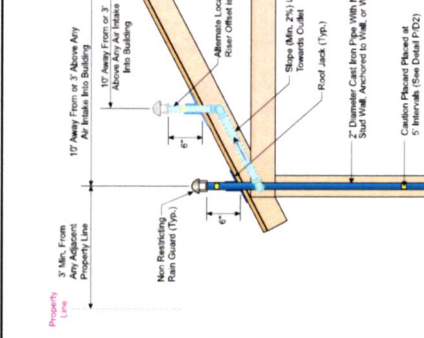
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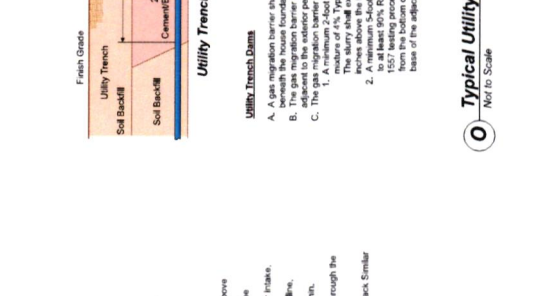
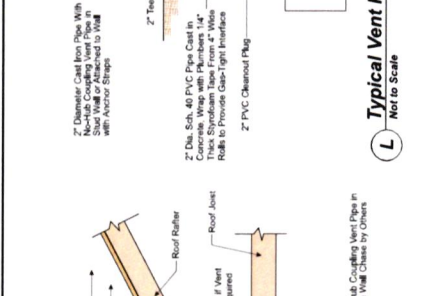
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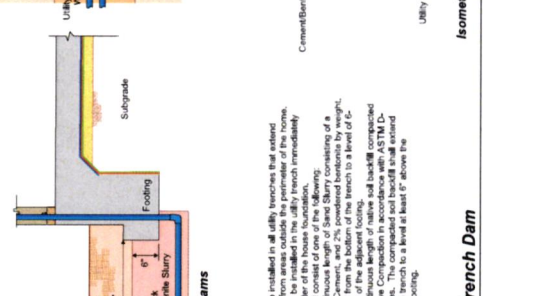
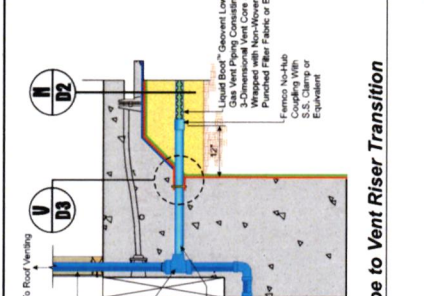
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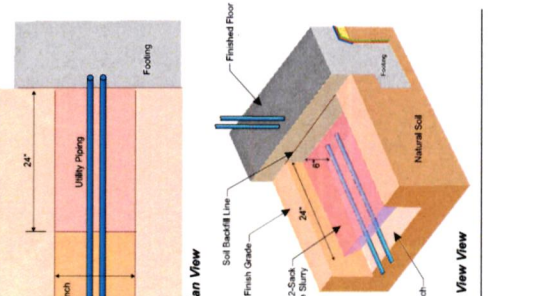
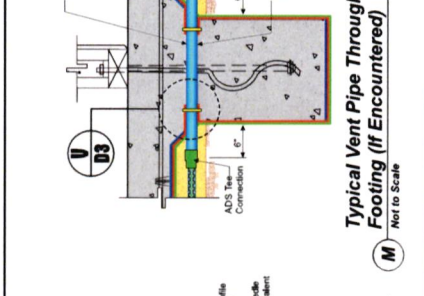
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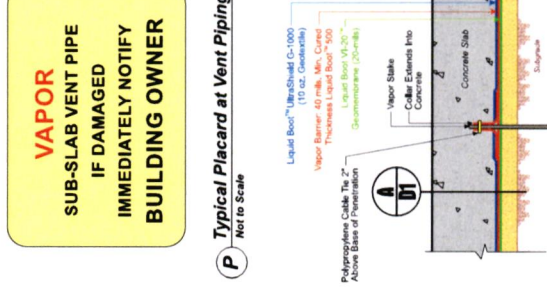
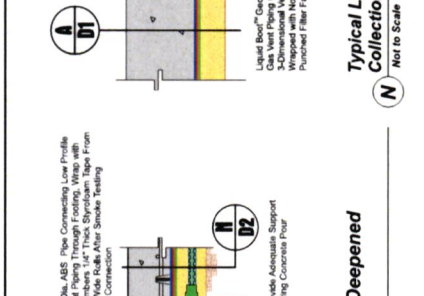
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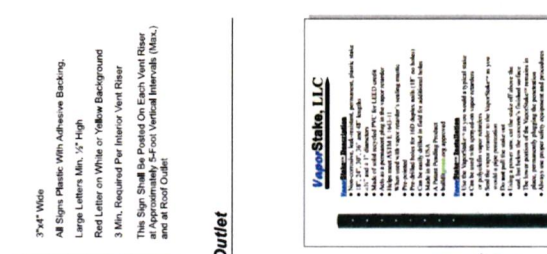
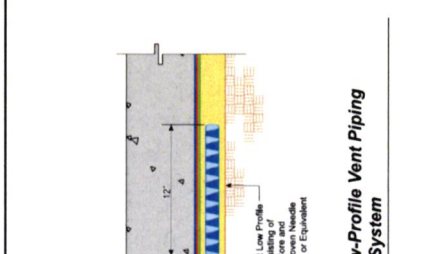
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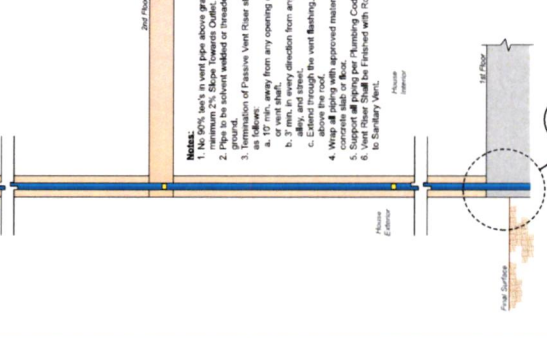
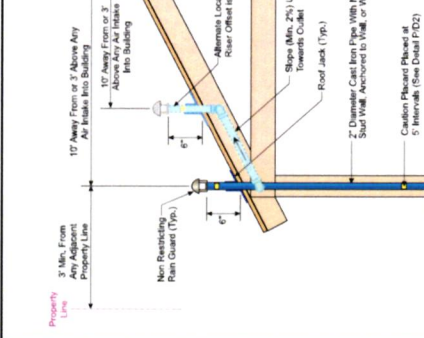
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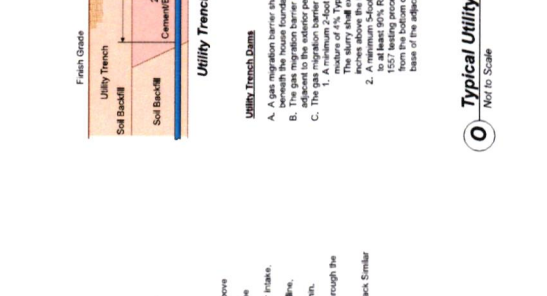
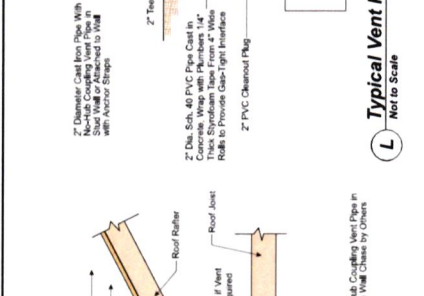
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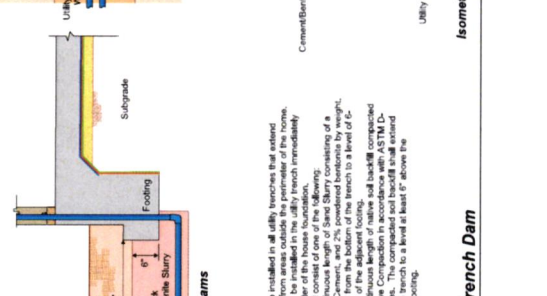
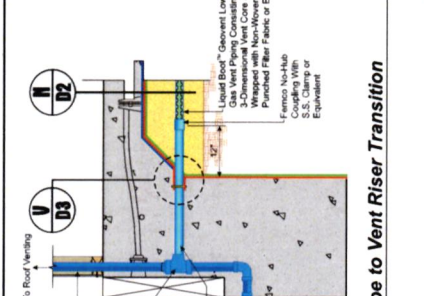
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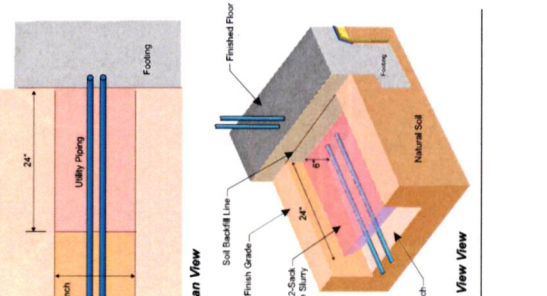
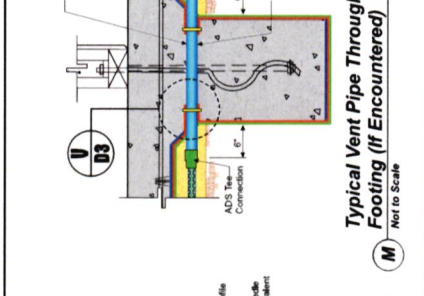
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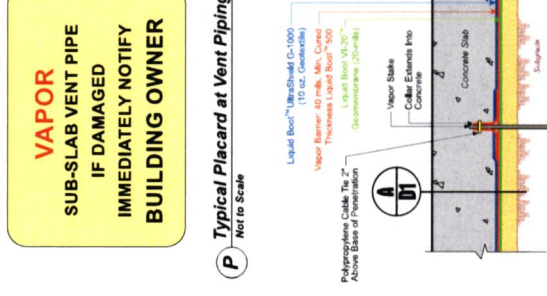
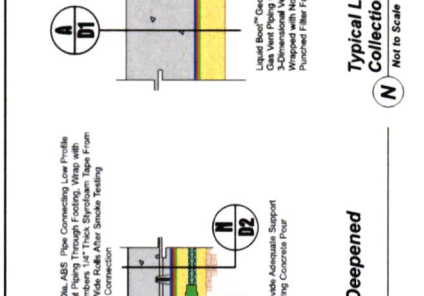
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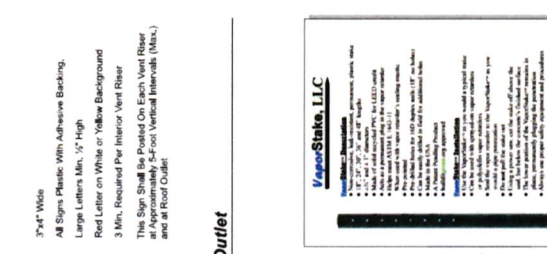
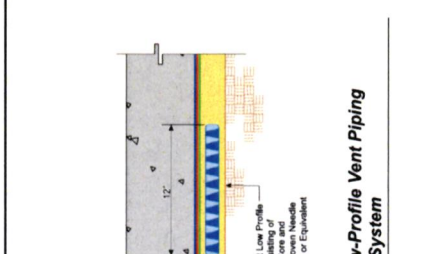
**AD Vapor Barrier and Vent Piping Details**



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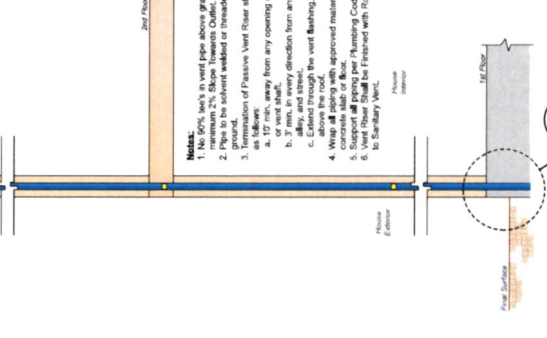
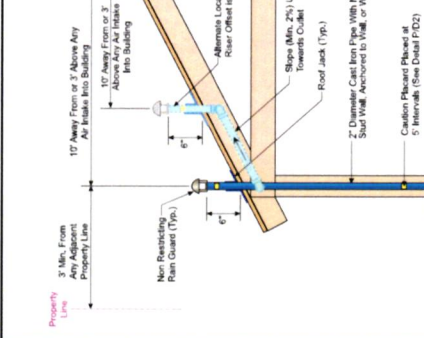
**AF Vapor Barrier and Vent Piping Details**



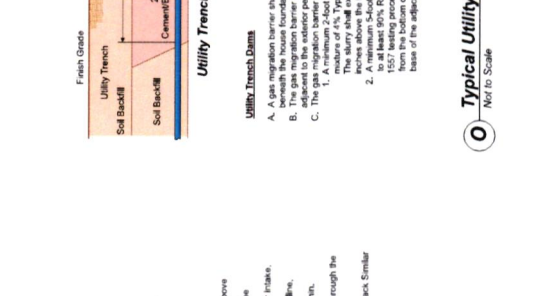
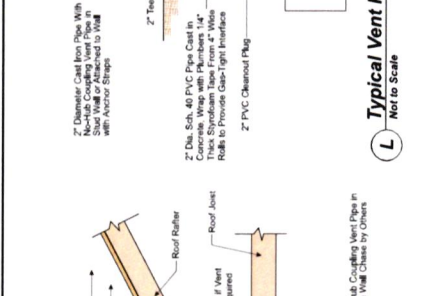
**AG Vapor Barrier and Vent Piping Details**



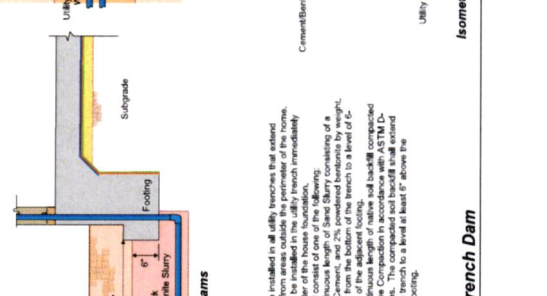
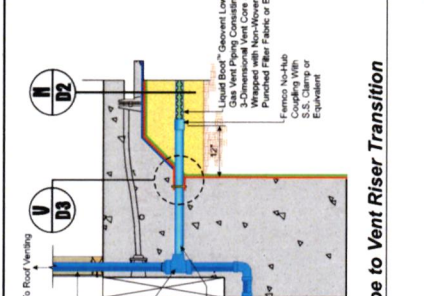
**AH Vapor Barrier and Vent Piping Details**



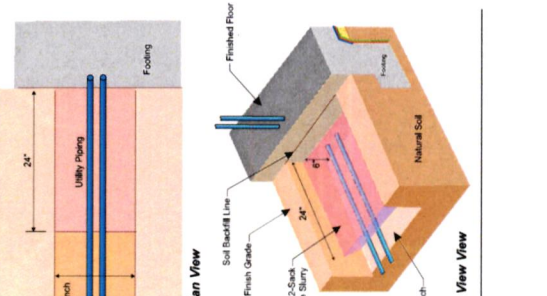
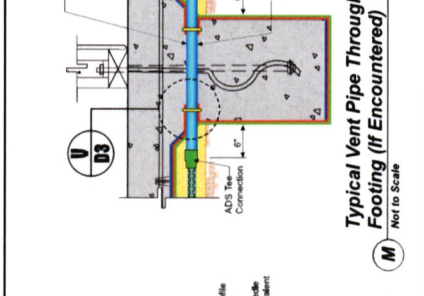
**AI Vapor Barrier and Vent Piping Details**



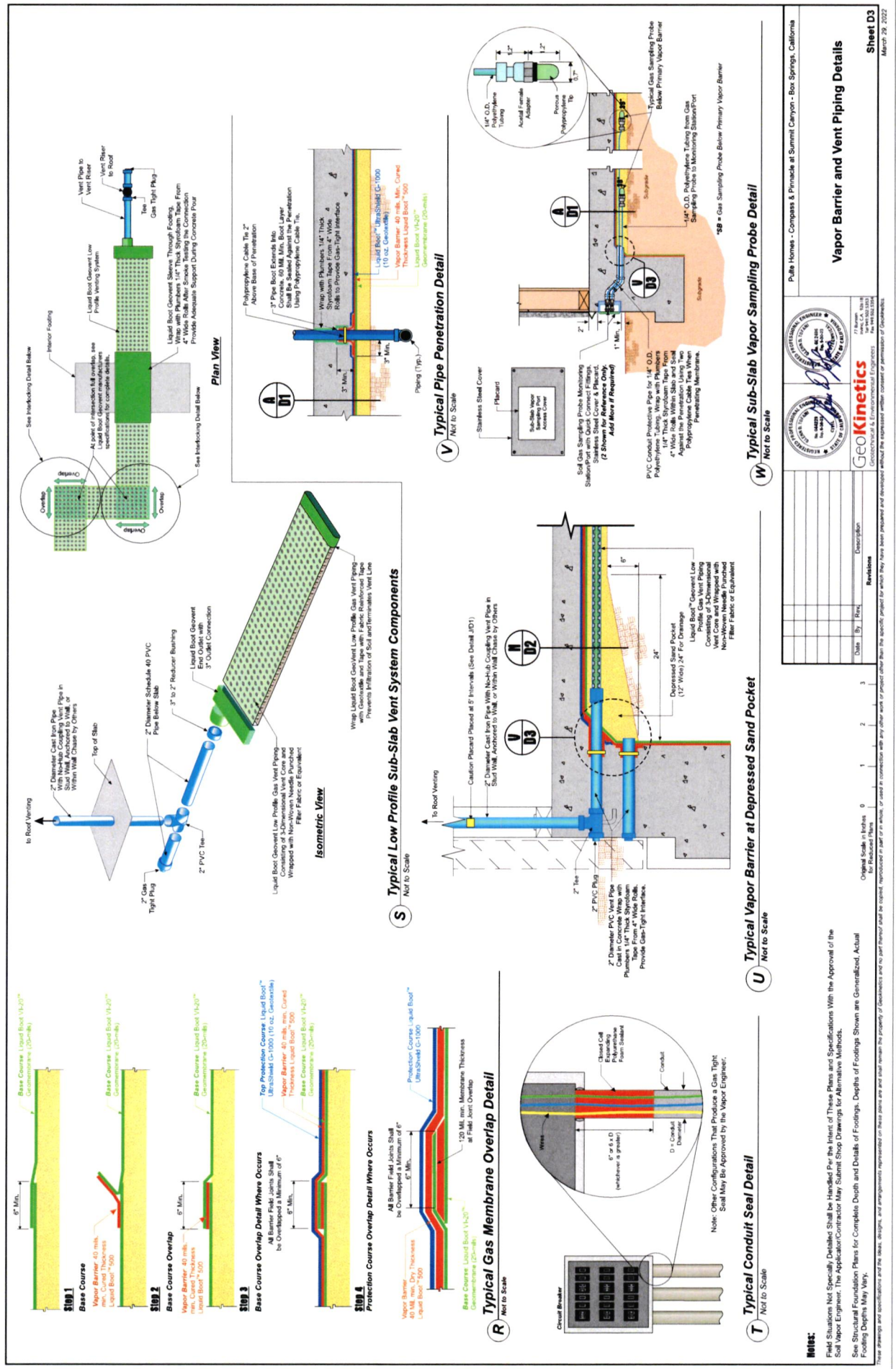
**AJ Vapor Barrier and Vent Piping Details**



**AK Vapor Barrier and Vent Piping Details**







**NOTES:**  
Field Situations Not Specially Detailed Shall be Handled Per the Intent of These Plans and Specifications With the Approval of the Soil Vapor Engineer. The Applicator/Contractor May Submit Shop Drawings for Alternative Methods. See Structural Foundation Plans for Complete Depth and Details of Footings. Depths of Footings Shown are Generalized, Actual Footing Depths May Vary.  
Notes, drawings and specifications are the property of Geokinetics and no part thereof shall be copied, reproduced or used in connection with any other work or project unless the specific written permission of Geokinetics is obtained.



***Attachment B***  
***Active System Component***  
***Installation Manual***



March 31, 2022

Matthew D. Matson  
Manager Land Planning & Development  
Pulte Group  
27401 Los Altos, Ste. 400  
Mission Viejo, CA 92691

**SUBJECT: INSTALLATION MANUAL FOR ACTIVE VIMS COMPONENTS FOR  
SPRING MOUNTAIN RANCH DEVELOPMENT, TRACT 33410 -  
RIVERSIDE COUNTY, CALIFORNIA**

Dear Mr. Matson:

As requested, this represents a brief installation manual for the active VIMS components outlined in Section 4.2 of the OM&M report prepared for the site. As indicated in the OM&M, the VIMS's have been designed such that they can be converted to an active mitigation system (i.e., sub-slab depressurization (SSD) system) if required at a future date. Conversion to an active system would include the installation of a Fantech RN2 in-line blower on one of the vent risers (VR-1) so that the system can be operated in an SSD mode. The blower would pull air from the sub-slab vent system, while fresh air would enter the system through the passive vent riser. A Dwyer Series 1900 Pressure Switch would also be installed below the blower inlet which would measure the flow pressure from the blower installation. In the event that the blower does not provide the required pressure (blower failure or vent riser obstruction), an operational trouble light mounted on the outside of the home will be deactivated. None of these active system components are currently proposed to be installed on the homes in the Tract.

Per the OM&M, Pulte will install a weatherproof doghouse enclosure at vent riser VR-1 on the homes as shown on the plan set. In addition, Pulte will provide a dedicated 120 volt AC outlet inside the doghouse for powering a future blower and pressure switch. Pulte will also provide an electrical box at the front of the house and a conduit run routed from the box to the doghouse for the future notification light cabling. The installation of the blower, the pressure switch and the notification light will be the responsibility of the homeowner in the unlikely event that those components are requested to be installed. The conversion to an active system would only be potentially necessary if long term monitoring indicated that elevated soil gas VOC levels (1,000 times indoor air screening levels) exist at the landfill, leading to potentially increased

soil gas VOC levels under the homes within the Tract. The monitoring protocol, as well as a discussion of the responsible entity(s) making the determination as to what additional OM&M activities may be required, is discussed in Section 5.6 of the OM&M Plan.

A schematic illustrating the active system components is provided as Figure 1. In the unlikely event that an active system is required, the following steps will be required in order to convert the passive system into an active one:

1. Acquire the following parts:
  - i. A Fantech RN2 Inline Radon Fan / Blower.
  - ii. A Dwyer – Series 1900 or ADPS/EDPS differential pressure switch.
  - iii. A Dayton (15) 30G217 plastic pilot light (or equal).
  - iv. 2" Schedule 40 or cast iron piping and elbows (based on current installation).
  - v. ¼" tubing for the pressure switch.
  - vi. Electrical wiring for the notification circuitry.
2. Open the access panel inside the garage to access the doghouse. The configuration of the doghouse with the necessary components is provided in Figure 1.
3. Dryfit the blower with associated elbows and connectors in order to determine the height of the cuts required on the vent riser.
4. Once the total height of the system is determined, cut the vent riser in two places as shown in the figure and install the in-line blower using the fittings shown per standard plumbing code sections.
5. Mount the Pressure Switch to a wall / stud.
6. Drill a hole and tap ¼" pipe threads into the upper horizontal pipe as shown in the Figure. Install an airtight ¼" tubing fitting into the horizontal pipe run.

March 31, 2022

7. Install 1/4" tubing from the pressure switch to the fitting in the horizontal connector piping run.
8. Connect the circuitry as shown in the wiring schematic from / to the pressure switch and the trouble light.
9. Energize the blower and check for leaks at the fittings and at the tubing / pressure switch assembly.
10. Adjust the sensitivity setting on the pressure switch so that the trouble light is illuminated when the blower is on.
11. Turn off the blower and confirm that the trouble light is extinguished.
12. Turn the blower back on.

The active blower system is now installed and operating as required. Cut sheets for the hardware items referenced above are provided in Attachment A. We hope that this installation manual is consistent with your needs. Please do not hesitate to contact me if you have any questions or comments.

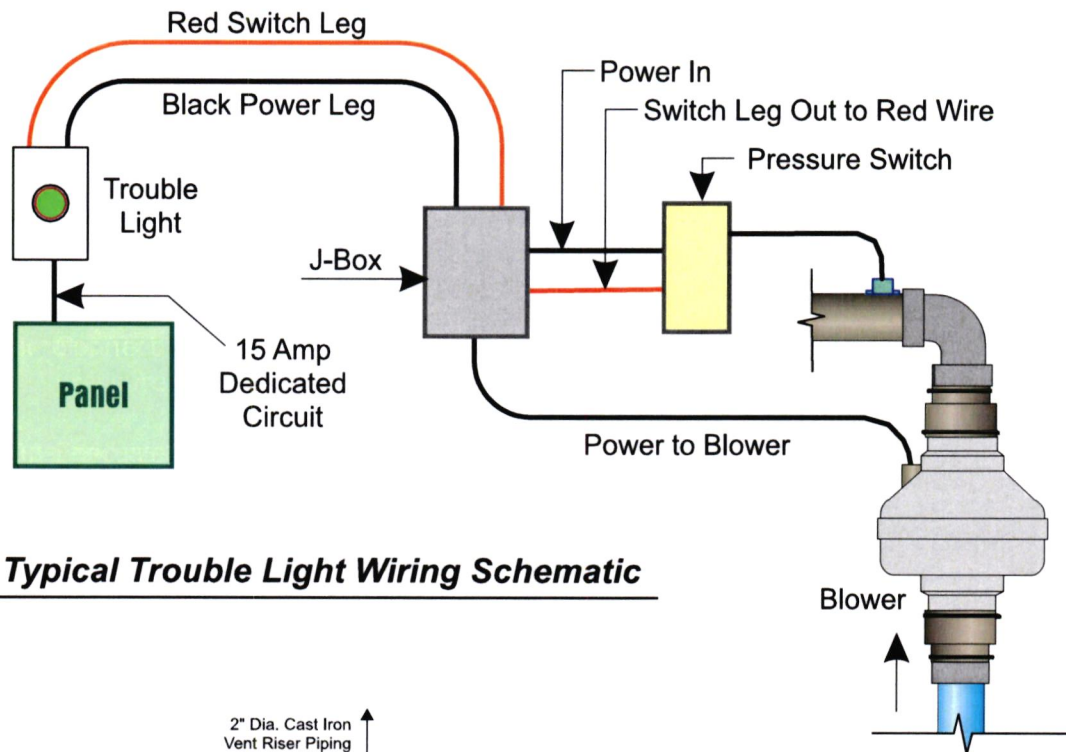
Sincerely,  
GEOKINETICS, INC.

Kevin J. Lea, RCE  
Senior Engineer

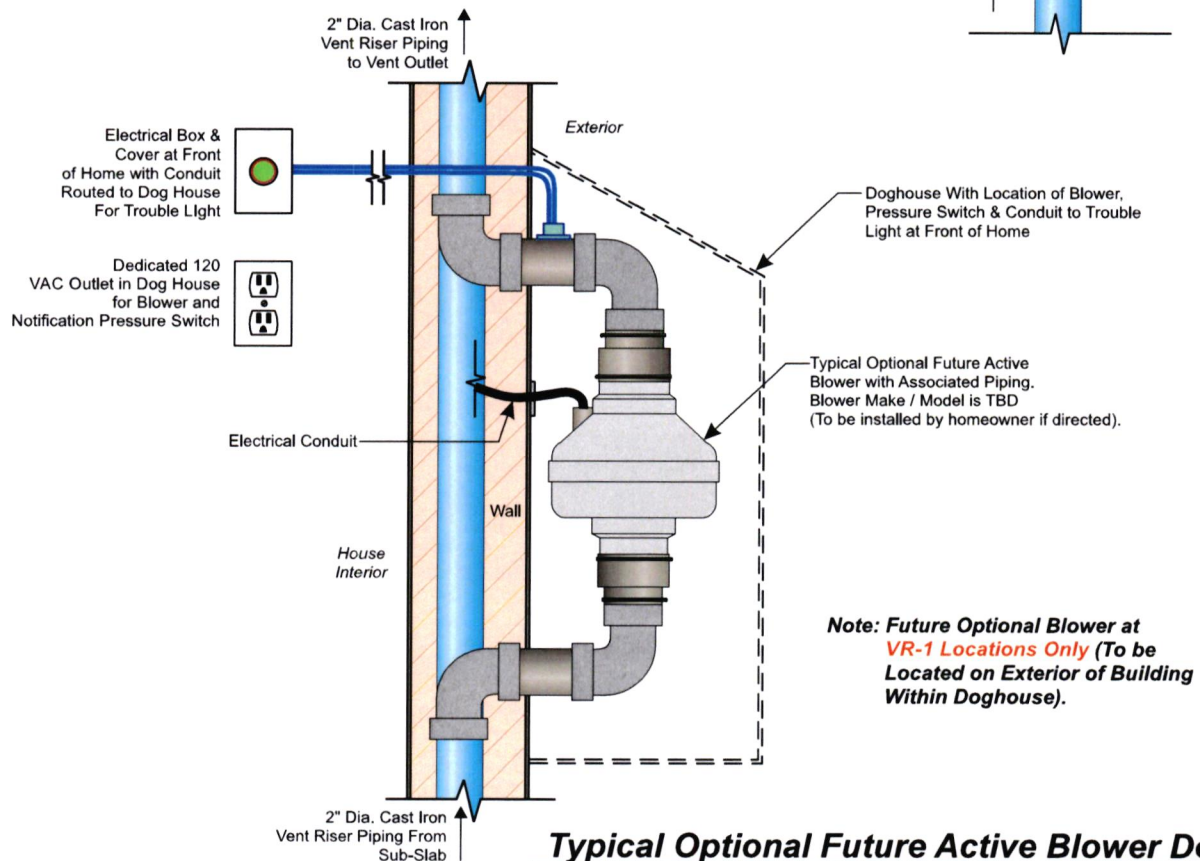
attachments







***Typical Trouble Light Wiring Schematic***



***Typical Optional Future Active Blower Detail***

**Not to Scale**

**GeoKinetics**  
Geotechnical &  
Environmental Engineers

Project Name: Pulte Spring Mountain Ranch

Date: March 2022

**Typical Active System Details**

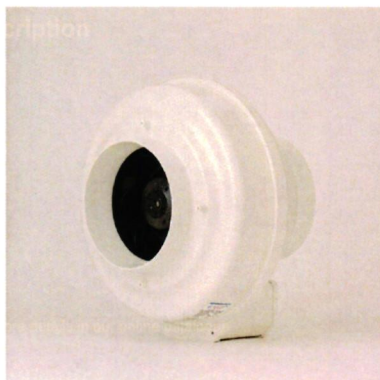
Figure 1

***Attachment A***  
***Hardware Cut Sheets***

## Rn2 Inline Radon Fan

Item #: 89052

Variant : 120V 1~ 60Hz



### Description

- Use for **Medium Suction, Low Airflow** applications
- UV resistant, UL Listed durable plastic
- UL Listed for use in commercial applications
- Watertight electrical terminal box
- Totally enclosed for protection
- Automatic reset thermal overload protection
- Zero leakage

Active radon mitigation systems employ specialized fans to exhaust radioactive radon gas from underneath building structures via a sealed pipe system. These systems are designed to remove radon gas before it migrates into the building envelope.

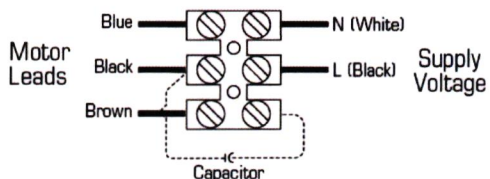
The **Rn2** is ideally tailored performance curve for a vast majority of your mitigations that require medium... Find more details in our online catalogue

### Technical parameters

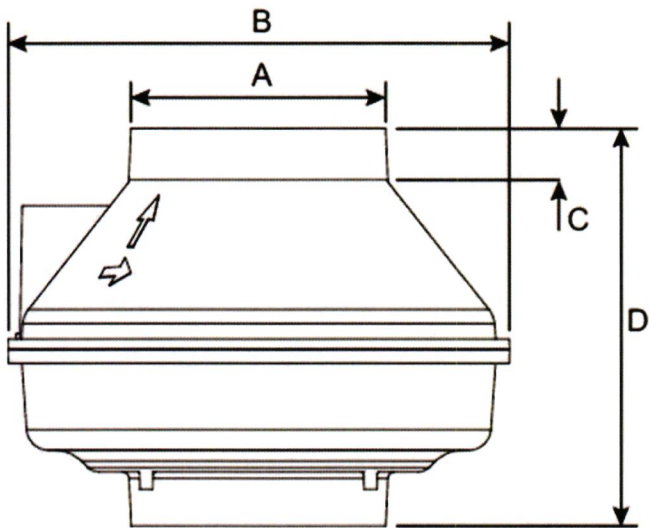
Nominal data	
Voltage (nominal)	120 V
Frequency	60 Hz
Phase(s)	1~
Input power	58 W
Input current	0,484 A
Impeller speed	2,533 r.p.m.
Air flow	max 166 cfm
Protection/Classification	
Enclosure class, motor	IP44
Insulation class	B
Certificate	cULus, HVI
Dimensions and weights	
Duct dimension; Circular, inlet	4 in.
Duct dimension; Circular, outlet	4 in.
Weight	4.9 lb
Optional	
Duct connection type	Circular

### Dimensions

### Wiring





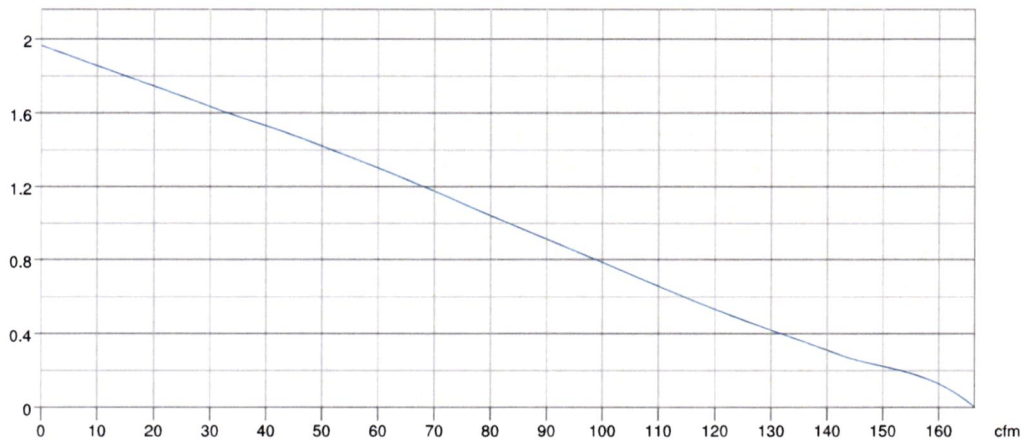


Model	A	B	C	D
Rn1	4 15/32 (114)	10 (254)	1 1/4 (32)	9 1/4 (235)
Rn2	4 15/32 (114)	10 (254)	1 1/4 (32)	9 1/4 (235)
Rn3	5 7/8 (149)	11 1/2 (292)	1 1/4 (32)	9 1/4 (235)

Dimensions in inches (mm).

#### Performance curve

in. wg.



#### Hydraulic data

Required air flow	-
Required static pressure	-
Working air flow	-
Working static pressure	-
Air density	0.075 lb/ft <sup>3</sup>
Power	-
Fan control - RPM	-
Current	-
SFP	-
Control voltage	-
Supply voltage	-

Accessories

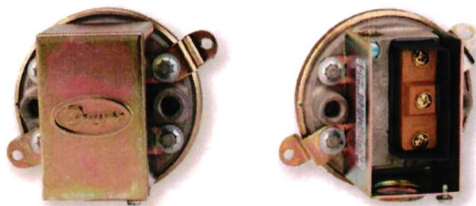
FRIK 4x3 Rn Installation Kit (95904)	FRIK 4x4 Rn Installation Kit (95905)
LDVI® 4x3 Bulk Pack, 54 pcs (95908)	LDVI® 4x4 Bulk Pack, 36 pcs (95909)

Documents

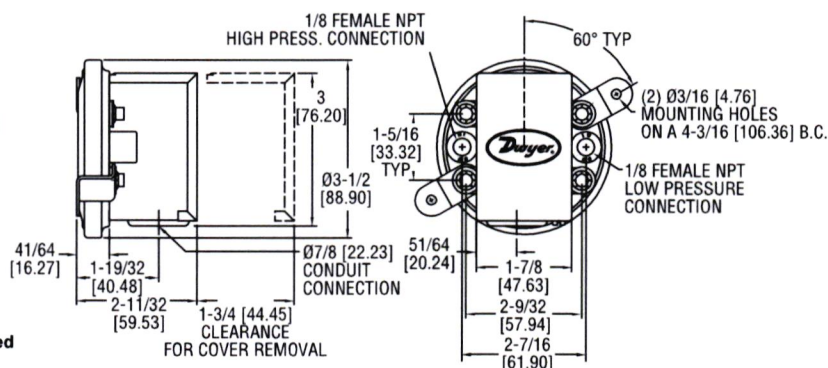
Rn Series Brochure.pdf
Rn2_Sales_Sheet.pdf
484840 Rn OIPM EN FR .pdf

# COMPACT LOW DIFFERENTIAL PRESSURE SWITCHES

Set Points from 0.07 in to 20 in w.c. Repetitive Accuracy within 3%



Series 1910 switch with conduit enclosure off.  
Shows electric switch and set point adjustment screw located on same side for easy installation.



The Dwyer-engineered force-motion amplifier increases the leverage of diaphragm movement and results in a switch with excellent sensitivity and repeatability.



Scan here  
to watch  
product video

Our most popular **SERIES 1900** combines advanced design and precision construction to make these switches able to perform many of the tasks of larger, costlier units. Designed for air conditioning service, they also serve many fluidics, refrigeration, oven and dryer applications. Series 1900 switches have set points from 0.07 to 20 in w.c. (1.8 to 508 mm). Set point adjustment is easy with range screw located inside conduit enclosure. Internal location helps prevent tampering. UL, CE and CSA listed, and FM approved. For use with air or compatible gases.

## FEATURES/BENEFITS

- Compact size and repeatability, provides a high-value switch for many industrial and OEM applications
- Wide range of models from 0.07 in w.c. to 20 in w.c. can meet exacting OEM specifications for a low pressure switch
- Range screw protected inside enclosure provides simplified making adjustments but prevents tampering

## APPLICATIONS

- Air conditioning refrigeration coil icing detection; defrost cycle initiation.
- Clogged filter detection.
- Variable air volume controller

## SPECIFICATIONS

**Service:** Air and non-combustible, compatible gases.

**Wetted Materials:** Consult factory.

**Temperature Limits:** -30 to 180°F (-34 to 82.2°C).

**Pressure Limits:** 45 in w.c. (11.2 kPa) continuous, 10 psig (68.95 kPa) surge.

**Switch Type:** Single-pole double-throw (SPDT).

**Repeatability:** ±3%.

**Electrical Rating:** 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. Derate to 10 A for operation at high cycle rates.

**Electrical Connections:** 3 screw type, common, normally open and normally closed.

**Process Connections:** 1/8" female NPT. **Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations.

**Set Point Adjustment:** Screw type inside conduit enclosure.

**Weight:** 1 lb 4.5 oz (581 g).

**Agency Approvals:** CE, CSA, FM, and UL. Optional-EXPL explosion-proof enclosure does not possess any agency approvals.

## OPTIONS

### Weatherproof Housing

16 ga. steel enclosure with gasketed cover (NEMA 4, IP66) for wet or oily conditions. Withstands 200 hour salt spray test. Wt. 5-1/2 lb (2.5 kg). Switch must be factory installed.

**Note:** To order, change 1910 base number to 1911 and add -WP suffix.

**Example:** 1911-1-WP

### Explosion-Proof Housing

Cast iron base with brass cover. Rated Class I, Groups D; Class II, Div. 2, Groups E, F, G; Class III and NEMA 7, 9 NEMA 3. (7 lb). Switch must be factory installed.

**Note:** To order, change 1910 base number to 1911 and add -EXPL suffix.

**Example:** 1911-1-EXPL

### Manual Reset Option (Model 1900 MR)

Includes special snap switch which latches on pressure increase above the setpoint. Switch must be manually reset after pressure drops below the setpoint. Available on -1, -5, -10 or -20 ranges only. Option is not UL, CSA or FM listed. For use only in single positive pressure applications.

**Note:** To order, change 1910 base number to 1900 and add -MR suffix.

**Example:** 1900-10-MR

## MODEL CHART

Model	Operating Range, in w.c.	Approximate Deadband	
		At Min. Set Point	At Max. Set Point
1910-00	0.07 to 0.15	0.04	0.04
1910-0	0.15 to 0.5	0.10	0.10
1910-1	0.40 to 1.6	0.15	0.16
1910-5	1.40 to 5.5	0.30	0.30
1910-10	3.0 to 11.75	0.40	0.40
1910-20	4.0 to 20.0	0.40	0.50

## ACCESSORIES

Model	Description
A-399	Duct pressure monitor kit; for use with standard or manual reset model switches; includes mounting flange, tubing and adapters
A-329	Street ell; brass adapter for applications requiring right angle connections; two required for differential pressures
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16" ID rubber or plastic tubing; 4" insertion depth; includes mounting screws
A-489	4" straight static pressure tip with flange



Manual Reset Option

**Test Equipment Depot**

1-800-517-8431

Visit us at [www.TestEquipmentDepot.com](http://www.TestEquipmentDepot.com)

99 Washington Street  
Melrose, MA 02176  
Phone 781-665-1400  
Toll Free 1-800-517-8431



# Series ADPS/EDPS Differential Pressure Switch

## *With Dual Scale Field Adjustable Set Point Knob*



The **Series ADPS/EDPS Adjustable Differential Pressure Switch** is designed for pressure, vacuum, and differential pressures. The dual scaled adjustment knob in inches water column and pascals allows changes to the switching pressure to be made without a pressure gage. The ADPS/EDPS is available with settings from 0.08 in w.c. (20 Pa) up to 20 in w.c. (5000 Pa). The silicone diaphragm and PA 6.6 body make the series ADPS ideal for use with air and other noncombustible gases. Series EDPS models meet UL508 and are constructed of plenum rated plastics. The compact size, adjustment knob and low cost make the ADPS/EDPS the perfect choice for HVAC applications.



Please see [Series AT1ADPS](#) for ATEX approved.

## Product Applications

- Monitoring air filters and ventilators.
- Monitoring industrial cooling-air circuits.
- Overheating protection for fan heaters.
- Monitoring flows in ventilation ducts.
- Controlling air and fire-protection dampers.
- Frost protection for heat exchanges.

## Specifications

**Service:** Air and non-combustible, compatible gases.

**Wetted Materials:** ADPS: Diaphragm material: Silicone; Housing material: POM; Switch body: PA 6.6; Cover: Polystyrene;  
EDPS: Diaphragm material: Silicone; Housing material: Switch body: PA 6.6; Cover: Polystyrene; Materials UL 94 V-0 rated.

**Temperature Limits:** Process and ambient temperature from -4 to 185°F (-20 to 85°C).

**Pressure Limits:** Max. Operating Pressure: 40" w.c. (10 kPa) for all pressure ranges.

**Switch Type:** Single-pole double-throw (SPDT).

**Electrical Rating:** Max. 1.5 A res./0.4 A ind./250 VAC, 50/60 Hz; Max. switching Push-on screw terminals. M20x1.5 with cable strain relief or optional 1/2" NPT connection.

**Process Connections:** 5/16" (7.94 mm) outside diameter tubing, 1/4" (6.0 mm) inside diameter tubing.

**Enclosure Rating:** NEMA 3 (IP54).

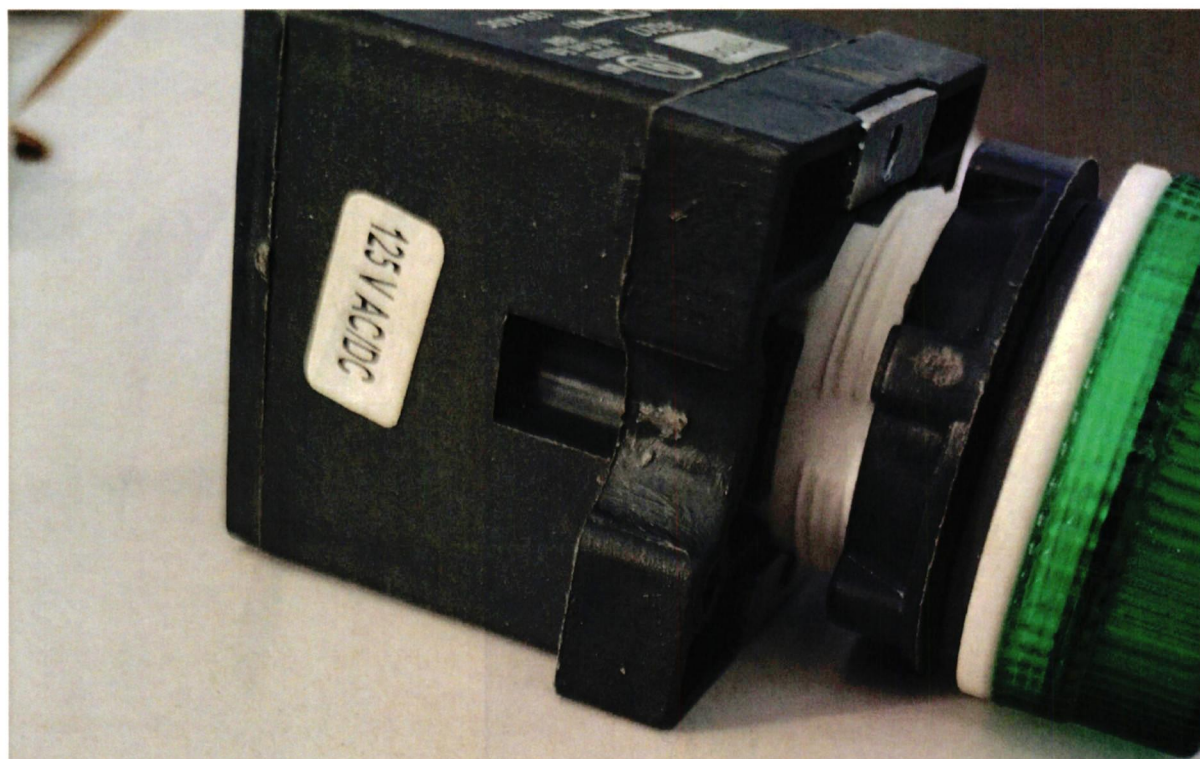
**Mounting Orientation:** Vertically, with pressure connections pointing downwards.

**Mechanical Working Life:** Over 10<sup>6</sup> switching operations.

**Weight:** 5.6 oz (160 g).

**Agency Approvals:** CE, ETL approved to UL508 and CSA C22.2#14 (EDPS only).





**Dayton® (15) 30G217**

**PLASTIC PILOT LIGHT**

LED, 22MM, 125VAC/DC, GR

Made in India

Manufactured for Dayton Electric Mfg. Co., Lake Forest, IL 60045 USA

**VOYANT EN PLASTIQUE**

LED, 22MM, 125VAC/DC, GR

Hecho en India

Fabricated for Dayton Electric Mfg. Co., Lake Forest, IL 60045 USA

**LUZ PILOTO DE PLÁSTICO**

LED, 22MM, 125VAC/DC, GR

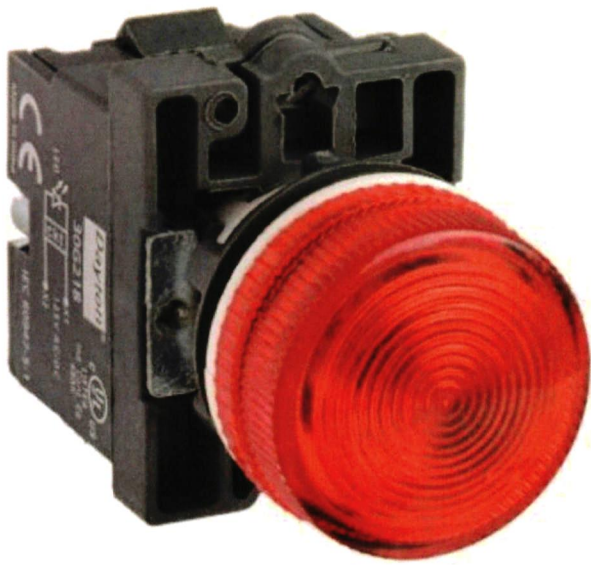
Fabricado en India

Fabricated for Dayton Electric Mfg. Co., Lake Forest, IL 60045 USA



CE





# Fan Status Indicator Light

## Technical Specs

Item	Pilot Light Complete
Voltage	120V AC
Color	Red
Lamp Type	LED
Shape	Round
Terminal Connection	Screw Clamp
Lens Material	Polycarbonate

Size	22 mm
Lamp Module Type	Full Voltage
Basic Material	Plastic
Body Material	Plastic
NEMA Rating	1, 12, 13, 2, 3, 4, 4x
Includes	Light Module
Standards	CE, CSA, IEC, UL



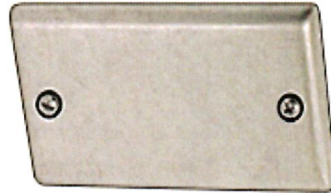


**Advanced Construction Technologies**  
*Construction Management and Methane Investigation/Mitigation Services*

77 Bunsen  
Irvine, CA 92618

Tel 949.502.5355  
Fax 949.502.5356

## 1 Gang Steel Industry Designation Blank Cover for Outlet Box



Outlet Box Component	Cover
For Maximum Number of Devices	0
Industry Designation	1 Gang
Shape	Rectangular
Height	4 3/16"
Width	2 5/16"
Cover Style	Raised
Material	Steel
Finish	Zinc Plated
Mounting Fasteners Included	Yes
Specifications Met	UL Listed
RoHS	Not Compliant

***Attachment C***  
***Standard Smoke***  
***Testing Protocol***

## **Gas Membrane or Vapor Barrier Smoke Testing Protocol**

All Gas Membranes and Vapor Barriers shall be Smoke Tested in accordance with the following protocol and certified "gas tight" by the Design Engineer prior to approval:

1. The gas membrane / vapor barrier shall be visually inspected. Any apparent deficiencies and/or installation problems shall be corrected prior to Smoke Testing.
2. The date, time, address, tract #, lot #, temperature, humidity, barometric pressure, wind speed/direction, and cloud cover shall be recorded on the Smoke Testing Inspection Form by the Design Engineer. The ambient air temperature at the time of testing should be in excess of 45° F and the wind speed at ground level should be 15 mph or less. (Note: Visual identification of leaks becomes more difficult with increasing wind speed.)
3. Assemble / connect the smoke testing system to one of the sub-slab vent riser (Alternative A) OR configure the smoke testing system to inject smoke beneath membrane through a temporary gas tight boot or sleeve attached to the membrane (Alternative B). Only inert, non-toxic smoke is to be utilized for the membrane Smoke Test.
4. Activate the smoke generator / blower system @ a nominal 150 cfm to 950 cfm flow rate and 2.0" H<sub>2</sub>O minimum duct pressure with the outlet vent riser(s) uncapped. Note: Minimum 2" H<sub>2</sub>O duct pressure should be measured at or near blower outlet. Continue to purge the system for 60 seconds after smoke begins to emerge from the vent outlet(s).
5. Cap vent outlet(s). Adjust the smoke generator / blower control valve to maintain 1" to 2" H<sub>2</sub>O over-pressure in vent piping system (Alternative A only). The Blower / Smoke Generator system should be capable of sufficient pressure and flow to induce a slight (i.e.  $\approx 1/4"$  to  $1/2"$ ) lifting of the membrane. Monitor the membrane for lifting. Reduce the pressure / flow rate if excessive lifting occurs.



6. Select one membrane coupon sampling location for every 500 to 1,000 ft<sup>2</sup> of membrane area. Select the sampling locations so as to (1) facilitate purging of fresh air pockets from beneath membrane; and (2) provide a representative test location for confirmation of membrane thickness.
7. Label the membrane coupons. Mark the coupon location / designation on the floor plan. A marked-up floor plan to be included with the Smoke Testing Inspection Form.
8. Confirm adequate flow of smoke from the coupon sampling locations. Low rate of smoke flow may be indicative of poor communication between vent piping gravel backfill and the base of membrane for Alternative A (i.e. dirt placed above trench gravel). If a low rate of smoke flow from coupon sampling location(s) occurs, use Alternative B described under Item #3 above for smoke injection. Connect smoke generator to injection boot and continue with smoke injection. (Note: Adequate continuity of the sand or gravel between the vent lines and the base of the membrane must be confirmed prior to membrane certification.)
9. Install a temporary seal at the membrane sampling locations after purging using HDPE with GSE double-sided butyl-asphaltic tape or other procedure approved by the Design Engineer. Mark the coupon sampling location(s) with fluorescent green paint. Repair the sampling locations using the gas membrane / vapor barrier manufacturer's protocol following completion of the test.
10. Select one 0.05" perforation test location for every 1,000 ft<sup>2</sup> of membrane area up to a maximum area of 2,000 ft<sup>2</sup> and one additional perforation test location for every 5,000 ft<sup>2</sup> thereafter. Select representative test locations dispersed somewhat uniformly across the surface of membrane. Perforate the membrane at test the locations using the 0.05" pin. Confirm / photograph the smoke emergence at each test location. Mark the test locations with fluorescent green paint. Temporarily repair test locations after verification using HDPE tape or other material approved by the Design Engineer. Repair the sampling locations using the gas membrane / vapor barrier manufacturer's protocol following completion of the test.

11. Maintain operation of smoke generator / blower system for at least 10 minutes following purging of membrane. Thoroughly inspect the entire membrane surface. Use fluorescent green paint to mark / label any leak locations. Mark / label all leak locations on the floor plan which is to be included with the Smoke Testing Inspection Form.
12. Repair the leak locations marked in Step #11 using the gas membrane / vapor barrier manufacturer's protocol.
13. Repeat step #'s 11 and 12, as necessary, to confirm the integrity of the membrane.
14. Prepare the smoke testing Inspection Form. Notes should include the date, tract # and lot # and/or address, name of Methane or Vapor Barrier Engineer, name of person who performed the test, number of leaks identified, type and distribution of leaks identified (i.e. tears, pin-holes or thin sections, seam leaks, boot leaks, etc.), and the building floor plan with leak locations, coupon locations, and test perforation locations. The Inspection Form is to be signed and stamped by the Design Engineer / Inspector.
15. Install a weather-proof tag on front-most vent riser confirming the successful completion of the smoke testing and the approval of gas membrane or vapor barrier. The tag should include:

"Smoke Tested OK"  
<tract # and lot # or address>  
<date>  
<time>  
<name of tester>

---

{ E N D }

**EXHIBIT "C"**

**FORM OF ASSIGNMENT AND ASSUMPTION AGREEMENT**

**[attached hereto]**



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1 IN WITNESS WHEREOF, the parties have caused this Agreement to be executed as of the  
2 day and year first above written.

3 ASSIGNOR:

4 PULTE HOME COMPANY, LLC, a Michigan limited  
5 liability company

6 By: \_\_\_\_\_

7 Name: \_\_\_\_\_

8 Title: \_\_\_\_\_

9  
10 ASSIGNEE:

11 SUMMIT CANYON COMMUNITY ASSOCIATION, a  
12 California nonprofit mutual benefit corporation

13  
14 By: \_\_\_\_\_

15 Name: \_\_\_\_\_

16 Title: \_\_\_\_\_

17  
18 By: \_\_\_\_\_

19 Name: \_\_\_\_\_

20 Title: \_\_\_\_\_