APTIM

Technical Memorandum

Technical Review of Proposed Modification to a Passive Vapor Intrusion Mitigation System Installed at the Former TRW Site, Sunnyvale, CA

Date: May 20, 2022

To: Dr. Lilian Abreu
U.S. Environmental Protection Agency
Task Order Project Officer

From: Mr. Bill Morris
Vapor Mitigation Sciences LLC on behalf of Aptim Federal Services LLC

Task Order: TO 0025

Project No.: 500291-01410003

Vapor Mitigation Sciences' (VMS) task was to review several documents regarding the passive system and proposed modifications to the passive system installed previously at the former TRW building at 825 Stewart Avenue, Sunnyvale, CA.

Documents reviewed are as follows:

- Memorandum from Mathew Plate, regarding the "Passive Sub Slab Depressurization (SSD) System Operation and Maintenance Plan (Document Control Number [DCN] FY22SEMD_161) and Evaluation of Passive SSD System, Former TRW Microwave Site, Sunnyvale, California"

- A letter to Mr. Kurt Batsel, dated October 7, 2021, regarding the "EPA Site Visit and Vapor Intrusion Field Assessment, 825 Stewart Avenue, Sunnyvale, CA, TRW Microwave Superfund Site (CERCLIS ID# CAD009159088)"

- A Northrop Grumman / AECOM Document dated March 31, 2022, regarding the "Passive Sub Slab Depressurization System, Operation and Maintenance Plan, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, CA" • A Northrop Grumman / AECOM

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Document dated April 15, 2022, regarding the "Evaluation of Passive Sub Slab Depressurization System, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, CA"

General Comments

1. Based on professional judgement, VMS identifies the current mitigation system as a sub-slab venting system instead of a sub-slab depressurization (SSD) system. It would be challenging with significant uncertainty to determine if depressurization is occurring under the slab even with the roof turbines rotating. These turbines may provide upwards of 0.2 inches of water column vacuum at the riser, and it would be difficult to measure sustained negative pressure differentials under the slab caused by the system configuration.

2. VMS recommends that the requested HVAC building test and balance information be collected during varying weather conditions. It is important to understand what the building pressures are during various weather conditions (i.e., windy vs. no wind days, high pressure vs. low pressure days, etc.). Temperature inversions are common occurrences in the Bay Area. When the inversion occurs atop a building it may result in concentrated effluents to get pushed back down to the roof and have a potential to re-entrain into the building through intakes on the roof. VMS has experienced this phenomenon on several sites along the West Coast in California with active systems and exhaust flow around 15-20 cubic feet per minute (cfm) and a passive system would generally have less flow than this.

3. The discharge of the pipes should be above the screen walls to be exposed to the wind as much as possible and ensure there is no chance of re-entrainment into the building. VMS recommends the exhaust points are located above the screen wall, whether the system is passive or active.

4. If sub slab soil gas concentrations are known to be elevated and indoor air sampling indicates unacceptable indoor air concentrations, while pressure differential data indicate the system is being protective, then re-entrainment at the building's rooftop is a possibility (and this may explain the unacceptable indoor air concentrations). A second booster fan can be used to increase the velocity at the exhaust point and dilute the concentrations making re-entrainment less likely.

5. Based on VMS professional judgement, additional building flow and balance data and indoor air results should be collected to assist with the evaluation of the design modifications to the passive sub slab ventilation system that will be implemented. If the additional data indicates an issue, then possibly upgrading to an active system may be prudent and more cost-effective than identifying where the issue is across the entire building footprint. An evaluation of the

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HVAC systems' flow and balances will help with determining the efficacy of the HVAC in augmenting the passive sub slab ventilation system.

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