

Waste Management of Alameda County, Inc. 172 98th Avenue, Oakland, CA 94603

August 30, 2013

Alameda County Health Care Services Agency Environmental Health Services, Environmental Protection 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577

Attn: Mr. Jerry Wickham, PG, CEG, CHG Senior Hazardous Materials Specialist

Transmittal: Response to Comments - Work Plan for Additional Investigation Former Waste Management Facility 6175 Southfront Road, Livermore, California GeoTracker Global ID T10000003066 SLIC Case RO0003076

Dear Mr. Wickham:

I declare, under penalty of perjury, that the information and recommendations contained in the attached Response to Comments - Work Plan are true and correct to the best of my knowledge.

Sincerely, Waste Management

Barry Skolnick Area Vice President WM-California Bay Area

Attachment

10540 White Rock Road, Suite 180 Rancho Cordova, California 95670

T: 916.444.0123 F: 916.635.8805



September 4, 2013

Mr. Jerry Wickham Senior Hazardous Materials Specialist Alameda County Environmental Health Services 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502

142782

Subject: Response to ACEH Comments for Work Plan – Additional Investigation at Former Waste Management of Alameda County, Inc. property, 6175 Southfront Road, Livermore, California 94550

Dear Mr. Wickham:

As you know, Waste Management of Alameda County, Inc. (Waste Management) has been trying to obtain closure related to impacts from low-level detections of chlorinated volatile organic compounds (CVOCs) reported in soil gas samples collected at their former property located at 6175 Southfront Road, Livermore, California (Site). To provide the information necessary to obtain closure following guidance provided by the Regional Water Quality Control Board (Water Board) in their July 31, 2009 document entitled "Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites", Waste Management has conducted numerous investigations since 2010. These investigations have included:

- Analysis of CVOCs for soil gas samples collected from 22 soil gas points.
- Analysis of CVOCs for groundwater samples collected from 13 temporary well points.
- Analysis of CVOCs for soil vapor samples collected from three sub-slab sample points installed within the existing office and maintenance shop for two separate events conducted in November of 2012 and February of 2013.
- Analysis of CVOCs for indoor air and ambient air samples collected in and around the office and maintenance shop in February 2013.

With the exception of the indoor air testing, the activities described above were conducted in accordance with Work Plans approved by the Alameda County Environmental Health (ACEH). The indoor air testing was added to the field program described in the June 12, 2012 ACEH approved Work Plan based on the results of the initial round of soil vapor sampling from the sub-slab points described above. In email correspondence dated January 30, 2013, the ACEH indicated that they had no objections to the proposed indoor and ambient air sampling program that was conducted in accordance with the Final Vapor Intrusion Guidance from the California Department of Toxic Substances and Control (DTSC) dated October 2011.

Based on the results of the investigations described above, Brown and Caldwell requested the ACEH provide a "no further action" (NFA) status for the Site, as documented in the March 15, 2013 Additional Investigation Summary Report (Summary Report).

This request was based on the following criteria consistent with the closure criteria presented in the July 31, 2009 Water Board Guidance:

- 1. Development of Complete Conceptual Site Model
 - a. *Pollutant sources are identified and evaluated*. As discussed in the Summary Report and ACEH approved Work Plan, vinyl chloride is the only constituent of concern for the Site. The source of the vinyl chloride detections has been demonstrated to be from the reductive dechlorination of parent products such as tetrachloroethene (PCE) and trichloroethene (TCE). It was further concluded that these impacts are the result of an old release of the parent compounds that occurred adjacent to or below the existing maintenance shop.
 - b. *The site is adequately characterized.* The site history and hydrogeology of the site have been presented in the ACEH approved June 12, 2012 Work Plan and Summary Report. These reports also show the vertical and lateral extent of constituents of concern within the soil, soil gas, and groundwater.
 - c. *Exposure pathways, receptors, and potential risks, threats, and other* environmental concerns are identified and assessed. Based on the reported low levels and limited extent of impacts, the only potential exposure pathway for identified impacts is from indoor air within the office building/maintenance shop (see Figure 2 from March 15, 2013 Summary Report). To assess this potential exposure pathway, the sub-slab and indoor air testing program was conducted as described in the Summary Report. As discussed in this report, sampling of indoor air and concurrent ambient air at the subject property showed that only one chemical, benzene, was detected above commercial use California Human Health Screening Levels (CHHSLs). However, even though the benzene levels detected indoors were above the commercial use CHHSL, they are identical to ambient levels to one significant figure. Thus, the slightly elevated benzene levels can be entirely attributed to the ambient contribution. Vinyl Chloride was not detected in the indoor air samples. In short, the indoor and concurrent ambient air data show no evidence of significant vapor intrusion at the subject property. The land use for the property will remain as commercial property. In 1998, the ACEH granted case closure for a former underground storage tank (UST) located at the Site. The Site was closed with known residual soil and groundwater impacts but included a restriction on excavation activities in the vicinity of the former UST (see Figure 2 of Summary Report for location of UST).

2. Control sources and mitigate risks and threats

a. Pollutant sources are remediated to the extent feasible. As stated above, the source of the reported vinyl chloride detections is from an old release of parent compounds that occurred adjacent to or below the existing maintenance shop. Only trace levels of the parent compounds, PCE, TCE, and cis-1,2 dichloroethene (cis-1,2-DCE) were detected at the

property indicating the primary source of impacts at the site for CVOCs no longer exists. The reported detections of these parent compounds are all below the reported CHHSLs for commercial properties published by DTSC.

- b. Unacceptable risks to human health, ecological health, and sensitive receptors, considering current and future land and water uses, are mitigated. As discussed for item 1c above, the only identified exposure pathway at the site was from indoor air within the existing office building and maintenance shop. As indicated in the Summary Report, it is our opinion that the results of the indoor air testing conducted in February 2013 combined with the results of the sub slab soil vapor testing, soil gas testing, and groundwater testing indicate that there is not significant exposure pathway for risks to human health from indoor air within the existing building at the Site and that a NFA status should be granted. However, in response to ACEH concerns expressed in their April 11, 2013 comment letter to the Summary Report, Waste Management has agreed to conduct additional sub-slab soil vapor and indoor/ambient air testing to further support the request for NFA status.
- c. Unacceptable threats to groundwater and surface water resources, considering existing and potential beneficial uses, are mitigated. The results of the investigations have shown that there are no threats to groundwater and surface water resources from the trace levels of CVOCs detected at the Site. As indicated above, the ACEH granted case closure for a former UST located at the Site. The Site was closed with known residual soil and groundwater impacts from petroleum related compounds.
- 3. Demonstrate that residual pollution in all media will not adversely affect present and anticipated land and water uses
 - a. *Groundwater plumes are decreasing*. The investigations conducted at the Site indicated trace levels of vinyl chloride were detected in only one sample within shallow (10 to 15 feet below ground surface (bgs)) very low permeable tight clays. No CVOCs were detected in water samples collected from depths of 20 feet bgs or deeper.
 - b. *Cleanup standards can be met in a reasonable timeframe.* As stated in the Summary Report, it is our opinion that cleanup standards that would be established for the Site have already been attained.
 - c. *Risk management measures are appropriate, documented, and do not require further Water Board oversight.* As stated in the Summary Report, it is our opinion that there are no risks associated with the reported CVOCs detected at the Site.

As indicated above, the ACEH has indicated that they believe additional data is required to assess potential risks from vinyl chloride within indoor air of the office building and maintenance shop. As stated in the Summary Report discussed above, it is our opinion that the data indicates there are no risks to indoor air associated with the one time reported detection of vinyl chloride in a sub-slab soil vapor sample collected in November of 2012.

To promote cooperation with the ACEH leading to closure of the Site, Waste Management has agreed to conduct an additional round of sub-slab soil vapor and indoor/ambient air sampling as outlined in Brown and Caldwell's Work Plan dated June 12, 2013. To provide the "worst case" scenario, this sampling round is scheduled to be conducted during the end of the Summer 2013 season (August or September 2013) when vapor concentrations would be expected to be at their highest due to the high ambient temperatures and low to no rainfall. The June 12, 2013 Work Plan also indicated that if the results of this testing indicate that there are no risks to human health from indoor air, regardless of whether vinyl chloride is detected in the subsurface, the report summarizing the results of this testing will request a NFA status from the ACEH. The Work Plan also requested that the ACEH provide concurrence with this approach.

The ACEH provided comments to the June 12, 2013 Work Plan in their letter dated July 30, 2013. Our response to each individual comment provided in the July 30, 2013 ACEH letter is provided in Attachment A. However, we would like to emphasize our response to two specific comments. First, ACEH Technical Comment 1 requests a revised Work Plan that includes radon analysis or indicates how risks would be evaluated for the November 2012 data if volatile organic compounds (VOCs) are not detected in the sub-slab or indoor air samples during the proposed sampling event. As discussed in McHugh and others¹, the use of radon to determine the slab attenuation factor is used when the measurement of indoor air VOC levels are problematic due to the presence of common indoor air VOCs that cause the detection limits for constituents of concern to be above screening levels. Radon can be used to determine the attenuation in these situations, as common indoor VOCs do not cause interference with radon analysis. However, the preferred and most definitive method is the performance of indoor air testing as is proposed for the Site. It is not clear why ACEH is requesting an attenuation factor for an event that occurred in the past. Waste Management has elected to evaluate risks associated with indoor air following the most conservative method provided in the DTSC Vapor Intrusion Guidance² and as stated above has agreed to conduct additional testing during a summer event that represents the "worst case" scenario of current conditions. A more detailed discussion of this topic including temporal variability as discussed in ACEH Comment 2 is provided in Attachment A.

Second, Comment 3 indicates that if the proposed investigation shows that there are no risks from indoor air, ACEH may still request additional data. As discussed above, multiple lines of evidence have already been provided for a low-threat closure following Water Board guidance, and multiple lines of evidence (sub-slab, indoor air, and outdoor air testing) are proposed again for the additional investigation. It is our opinion that the site already has sufficient information to warrant an NFA determination, and clearly if the results of the proposed investigation again indicate no significant risks, we believe that a NFA status should be provided.

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¹ Thomas E. McHugh, Douglas E. Hammond, Tim Nickels, and Blayne Hartman. 2007. Use of Radon Measurements for Evaluation of Volatile Organic Compound (VOC) Vapor Intrusion. ² California Environmental Protection Agency Department of Toxic Substances Control. 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October 2011.

Also note, because of the time sensitive nature of the project, the proposed indoor air testing will be conducted by the week of September 23, 2013. We would appreciate your concurrence with the approach prior to this date. Should you have any questions or would like to set up a meeting to discuss these issues, please do not hesitate to contact me at (916) 853-5334.

Very truly yours,

Brown and Caldwell h B. Turner, e. Jose lG chief Hydrogeolog DO cc: **Project File** Attachment:

Attachment A: Response to Comments

Attachment A

Response to Comments July 30, 2013 ACEH Letter ACEH Comment 1: Slab Attenuation Factor. Our April 11, 2013 correspondence suggested the use of radon analysis to help estimate the building slab attenuation factor. The Work Plan indicates that radon analysis will not be performed because the VOC data from subslab and indoor air sampling will be used to calculate an attenuation factor. We note that vinyl chloride was not detected in subslab data during the February 2013 sampling event and no attenuation factor could be calculated. An attenuation factor was not calculated during the November 2012 sampling event because no indoor air data was collected. The use of radon analysis would allow independent calculation of a slab attenuation factor regardless of the VOC concentrations in subslab and indoor air samples. In the Revised Work Plan requested below, please include radon analysis or indicate how risks would be evaluated for the November 2012 data if VOCs are not detected in the subslab or indoor air samples during the proposed sampling event. We note that the DTSC Vapor Intrusion Guidance recommends a default subslab attenuation factor or 0.05 for commercial buildings, which results in estimated indoor air concentrations of up to 7.0 micrograms per cubic meter (µg/m3) for vinyl chloride using the maximum concentration of 140 µg/m3 during the November 2012 sampling event. An indoor air concentration of 7.0 μ g/m3 for vinyl chloride exceeds the commercial land use CHSSL of 0.05 by more than two orders of magnitude.

Response: It is not clear why ACEH is requesting an attenuation factor for an event that occurred in the past. Waste Management has elected to evaluate risks associated with indoor air following the most conservative method provided in the DTSC (2011) Vapor Intrusion Guidance and has agreed to conduct additional testing during a summer event that represents the "worst case" scenario of current conditions. As discussed in the Vapor Intrusion Guidance, the slab attenuation factor is used in modeling to determine the concentration of indoor air if VOCs are found beneath the slab. However, as stated in the Vapor Intrusion Guidance, the more conservative method to assess these risks if numbers in sub-slab testing exceed screening levels is to conduct indoor air testing as proposed in the Work Plan. Furthermore, the use of radon to determine the slab attenuation factor is used when the performance of indoor air volatile organic compound (VOC) levels is problematic due to the presence of common indoor air VOCs that cause the detection limits for constituents of concern to be above screening levels. Radon can be used to determine the attenuation in these situations, as common indoor VOCs do not cause interference with radon analysis. Collection of indoor air sampling in February 2013 show that data can be collected within the building that provides low enough detection limits to determine if vinyl chloride is present at the indoor air CHHSL and is thus the more appropriate method to use for the analysis of risk. Based upon the detection of PCE at 260 μ g/m³ in the sub slab sample in February 2013, and the absence of PCE in any of the indoor air samples with a detection limit of 0.22 µg/m3, the highest attenuation factor that could be present at the Site is 0.0008.

If the flux of vinyl chloride, the primary concern for vapor intrusion at the site, through the soil is high enough to cause vapor intrusion concerns, then the 4 months between previous sampling events, or the 7 months between the last event and the proposed event in September provides enough time for vinyl chloride to accumulate in the subslab area. The sampling points were capped after completion of each sampling event. If there are not any detections in the subslab samples, then the November 2012 result was probably a buildup of vinyl chloride over decades. The PCE and TCE in SS-1 (which had the detection of vinyl chloride in November 2012) are below detection limits, and the samples collected from SG1-7 (which had the highest vinyl chloride detection) had trace levels of TCE an order of magnitude below the CHHSL, and no detections of PCE. Based upon the low level detections of PCE and TCE at the site (SG1-7, SS-2, and SS-3) the majority of TCE and PCE impacts have degraded to vinyl chloride, so the source has been extremely degraded.

It is also noted that correspondence from OEHHA (who publishes the CHHSLs) states that the 2005 CHHSLs do not consider daily exposure time component, which for industrial/commercial would

increase the indoor air target concentration 3 times for the industrial/commercial scenario assuming eight hour shifts (Appendix A). This would increase the commercial CHHSL from 0.0524 μ g/m3 to 0.1572 μ g/m3.

Comment 2: Temporal Variability. Sub-slab vapor samples were collected at three locations beneath the Break Room/Offices building on November 15, 23012 and February 2, 2103. Vinyl chloride was detected at concentrations up to 140 μ g/m3 in the sub-slab vapor samples collected on November 15, 2012 but was not detected at concentrations greater than the reporting limit of 3 μ g/m3 during the February 2, 2013 sampling event. The two sets of sub-slab vapor samples appear to have been collected and analyzed by different methods. It is not known whether the difference in results between the two sub-slab sampling events represents temporal variability or is partially an artifact of different sampling and analytical methods. In the Revised Work Plan requested below, please describe how temporal and sampling variability will be evaluated. Examples of methods to confirm previous results and help evaluate temporal and sampling variability include the collection of longer duration samples to account for temporal variability and the use of passive samplers or flux chambers to provide an additional line of evidence.

Response: There were two differences regarding collection during the two sampling events: 1) Collection of samples in glass syringes for immediate analysis by mobile laboratory was completed during the November 2012 event (except for SS-3 which also had a summa canister sampled after collection in a glass syringe), whereas collection in a 1-L summa canister occurred during the February 2013 event for submittal to a fixed laboratory; and 2) The samples collected in November 2012 were sampled using 1,1-DFA as the leak check compound, and the samples collected in February 2013 used 2-propanol. The reason for the difference in analysis is that the mobile laboratory cannot provide a low enough detection limit for vinyl chloride. That is why the sample collected from SS-3 in November 2012 was also collected using a summa canister, as the vinyl chloride detection limit was 80 µg/m3, above the CHHSL of 44.8 µg/m3. The results from SS-3 show that the temporal/sampling variability for the concentrations of benzene, toluene, and xylenes is low with a relative percent difference between November 2012 and February 2013 of between 10 and 48 percent (acceptable limits for soil gas). In addition, the relative percent difference for PCE in SS-2 between November 2012 and February 2013 was 35 percent, also an acceptable limit.

The duration of the samples collected for indoor air was 8 hours as prescribed in the Vapor Intrusion Guidance for commercial buildings. The duration of the samples collected from sub slab points was 5 minutes for the 1-L samples, at a purge rate of 200 milliliters per minute, as prescribed in Appendix G of the Vapor Intrusion Guidance, and the Active Soil Gas Investigation Advisory.

According to the Vapor Intrusion Guidance, passive soil gas sampling is a qualitative tool, not a quantitative tool. Therefore, passive gas sampling should only be used to determine the location and general composition of soil gas. We know the constituent of concern, and have delineated the impacts to soil gas from chlorinated VOCs. The Vapor Intrusion Guidance also states that passive soil gas samples should be collected if soil gas samples cannot be obtained by active methods. Appendix A of the Vapor Intrusion Guidance states that the USEPA recommends that flux chambers should not be used to evaluate vapor intrusion.

Comment 3: Concurrence on Proposed Approach. The Work Plan requests that ACEH provide concurrence that no further work will be required if indoor air sampling indicates no risk regardless of whether vinyl chloride is detected in the subsurface. Multiple lines of evidence must be considered and weighed against each other to evaluate vapor intrusion exposure. ACEH does not concur with making decisions only on indoor air data while ignoring other lines of evidence.

Response: The investigations on site have sampled groundwater, soil gas, sub-slab gas, indoor air, and ambient air. As stated in the Vapor Intrusion Guidance, *"it is important to obtain multiple lines*

of evidence to evaluate vapor intrusion exposure. Lines of evidence may be weighted differently, depending on its nature and quality. In general, the closer the sampled medium is to the receptor, the more relevant the data are for estimating exposure and greater its weight of evidence." Based upon the Vapor Intrusion Guidance, the highest weight should be assigned to the indoor air samples. However, multiple lines of evidence (sub-slab, indoor air, and ambient air) were proposed again as part of the additional workplan for investigation. If there are no detections of vinyl chloride in the sub-slab samples, then there is no potential for vapor intrusion. If there are detections of vinyl chloride in the sub-slab, then the attenuation rate through the concrete can be determined by comparing the results of sub-slab samples to indoor air. Any detections of TCE or PCE in sub-slab samples can be used to determine the site-specific attenuation factor.

Comment 4: References to Guidance. The Work Plan makes several references to compliance with the California Department of Toxic Substances Control "Vapor Intrusion Guidance," dated October 2011. We encourage the use of this guidance; however, the guidance should be used in its entirety rather than excerpting references out of context. The Work Plan proposes making risk decisions based solely on the results of the proposed indoor air sampling. This approach is inconsistent with the DTSC Vapor Intrusion Guidance which emphasizes the use of multiple lines of evidence. In the Revised Work Plan requested below, please use all of the DTSC Vapor Intrusion guidance in planning investigations.

Response. As stated above, multiple lines of evidence were proposed to be collected during the sampling event and we have used the guidance document in it's entirety as it relates to the Site and have not excerpted references out of context. It is unclear to us what part of the Summary Report the ACEH believes is "out of context." We do not propose to ignore results of the sub-slab or ambient air data, but instead to use these numbers in conjunction with the indoor air samples. Furthermore, previous investigations conducted at the Site have demonstrated that no significant source of vinyl chloride remains in groundwater, soil, and soil gas that are also lines of evidence to support closure for the Site in accordance and "in context" with the DTSC guidance and Water Board's guidance for low threat closure.

Comment 5: GeoTracker Submittals. We note that the June 12, 2013 Work Plan was not uploaded to GeoTracker. As described in the attached Responsible Party(ies) Legal Requirements/Obligations, all technical reports must be submitted to both the ACEH ftp site and the State Water Resource Control Board (SWRCB) GeoTracker website. Therefore, please upload the Work Plan by September 13, 2013 and all future reports to the GeoTracker website. In accordance with CCR Sections 2729 and 2729.1, which requires that beginning July 1, 2005 for SLIC cases, all analytical data, including monitoring well samples, submitted in a report to a regulatory agency as part of the LUFT program, must be transmitted electronically to the SWRCB Geotracker website via the internet.

Response. The Workplan was submitted on August 2, 2013. This response to comments and associated cover letter has also been submitted to Geotracker.

Appendix A: Email Correspondence from Hristo T. Hristov, MD, Ph.D., M.Env. Sc. From: Hristov, Hristo@OEHHA [mailto:Hristo.Hristov@oehha.ca.gov] Sent: Thursday, July 25, 2013 11:07 AM To: Gerbert, Lynnette; Painter, Page@OEHHA; Siegel, David@OEHHA Subject: RE: Indoor Air CHHSLs

Dear Ms. Gerbert,

I believe, you refer to the calculation of target indoor air concentration, when referring to indoor air CHHSL. You are right, the 2005 CHHSLs document does not consider daily exposure time component. The US EPA, in RAGS Part F, provides an equation which ignores inhalation rates and body weights but relies on exposure time. This, in effect, increases the calculated indoor air target concentration 3 times for the industrial/commercial scenario assuming eight hour shifts. OEHHA doesn't necessarily agree with this approach and believes that breathing rate as well as exposure time is important. While OEHHA disagrees with this approach, we cannot say it is invalid when used for a site risk assessment. Accordingly, you may follow the US EPA approach. At this moment, OEHHA is updating the CHHSLs document that will explain OEHHA's approach.

Please note: OEHHA is subject to the California Public Records Act. E-mail communications with OEHHA staff are not confidential and may be produced to members of the public upon request.

Sincerely,

Hristo T. Hristov, MD, Ph.D., M.Env. Sc. Staff Toxicologist Office of Environmental Health Hazard Assessment Air, Community, Environmental Research Branch 1001 I St., P.O. Box 4010 Sacramento, CA 95812 Phone: (916) 322-8364 Fax: (916) 322-9705 <u>Hristo.Hristov@oehha.ca.gov</u>

From: Gerbert, Lynnette [mailto:LGerbert@BrwnCald.com]
Sent: Wednesday, July 24, 2013 11:36 AM
To: Hristov, Hristo@OEHHA; Painter, Page@OEHHA; Siegel, David@OEHHA
Subject: Indoor Air CHHSLs

I have a quick question that I hope one of you can answer or direct me to the correct person. I see that soil and soil gas CHHSLs are posted on the web, but I don't see updates for the indoor air CHHSLs.

http://oehha.ca.gov/risk/chhsltable.html

Equations B-1 and B-2 in "Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil", January 2005 revision do not include an exposure time

component. The Regional Screening Levels, which came out after the CHHSLs were developed allows for the industrial worker equation to be altered for an 8 hour workday.

I need to develop indoor air CHHSLs for a number of compounds that aren't listed on Table 2 of "Use of California Human Health Screening Levels (SHHSLs) in Evaluation of Contaminated Properties" and wanted to check if it would be appropriate to add the exposure time component for the industrial worker.

My equation would be (for carcinogens): Indoor Air Screening Level for industrial worker = (TR (1e-6) x AT (25550 day)) / (EF (250 day/yr) x ED (25 yr) x ET (8hr/24hr) x URF) Exposure time for residents would be 24hr/24hr.

Thank you for your time and consideration, Lynnette

Lynnette Gerbert Principal Toxicologist Brown and Caldwell | Walnut Creek, CA LGerbert@brwncald.com T 925.210.2290



To send me large files, please use <u>http://dropbox.yousendit.com/LynnetteGerbert</u>