Board of Health comments on 10-50 Main St Project

As the 10-50 Main St re-development project falls directly in the Plume area, the site is under EPA/DEP jurisdiction as it is a superfund site.

These were the comments made by Jennifer McWeeney by an email to Mr. George Campbell on Mar 1st 2023.

EPA and MassDEP have reviewed the December 2022 modified RAM and RAM status report prepared for 10-50 Main Street in Ashland (RTN 3-15917). The modified RAM report addresses DEP's and EPA's previous comments contained in our 10/7/22 and 11/7/22 emails – thank you. However, upon further review, we have some additional concerns, particularly regarding 10 Main Street.

Comments regarding environmental conditions and potential data gaps at 10 Main Street:

- Groundwater data:

  - Groundwater data obtained from three upgradient wells (MW-10Main, B-5 and B-1) indicates that the Nyanza plume may not be migrating beneath this portion of the property (10 Main Street).

  - Groundwater data obtained from three downgradient wells (ARC-1, B-2 and B-7) indicates the presence of elevated levels of CVOCs (particularly PCE and TCE) downgradient of 10 Main Street (indicating a possible source area).

  - DEP understands that current VOC concentrations in wells ARC-1, B-2 and B-7 are expected to be lower; however, TCE was detected at concentrations up to 122 ug/L (over 24 times the GW-2 standard of 5 ug/L), and PCE was detected at concentrations up to 370 ug/L (over 7 times the GW-2 standard of 50 ug/L).

  - Please see the attached figure with 1985-2003 groundwater data from the 2011 RAO report.

- Soil data: In 2010, 120,000 ug/Kg of PCE was detected in soil at a 1' – 5' depth interval in boring ARC-1, located immediately downgradient of 10 Main Street (indicating a possible PCE source area).

- Indoor air (IA) and sub slab soil gas (SSSG) data:

  - IA and SSSG samples were collected from the rear of 20 Main Street building in 2010:

§ PCE and TCE were detected in indoor air at 9.4 ug/m3 and 1.1 ug/m3, respectively. PCE was detected in indoor air at about 6 times the MassDEP residential threshold value for PCE in indoor air of 1.4 ug/m3. TCE was detected in indoor air at approximately 3 times the MassDEP residential threshold value for TCE in indoor air of 04 ug/m3.

§ PCE and TCE were detected in sub slab soil gas at 9900 ug/m3 and 1.1 ug/m3. The PCE concentration in soil gas was particularly noteworthy - It was detected in sub slab soil gas at over 100 times the MassDEP residential sub slab soil gas screening values of 98 ug/m3.

§ Please see the attached table with indoor air and sub slab soil gas data from the 2011 RAO report.

o A Method 3 risk assessment was conducted during the Phase II investigation. The risk assessment evaluated residential risk for 10-20 Main Street portion of the building using EPCs calculated from indoor air data collected at 20 Main Street (i.e., sub slab soil gas data was not incorporated into these EPCs for residential indoor air). The risk assessment states that "the total [excess lifetime cancer risk] for the future resident within Building #10-20 is above MassDEP's target of 1x10-5. These results indicated that a condition of "No Significant Risk" does not exist for carcinogenic effects of exposures to the hypothetical future resident receptors within Building #10-20 Main Street. If an Activity and Use limitation was implemented at the Site to eliminate future residential exposures, a condition of "No Significant Risk" would exist at the Site."

Although current soil, groundwater, soil gas and indoor air concentrations may be lower than those detected several years ago, historic results still indicate the possible presence of a PCE source area either immediately downgradient of 10 Main Street, or within/beneath the 10 or 20 Main Street buildings (for example, associated with a floor drain). Just to note, PCE is not a contaminant of concern for the Nyanza Superfund Site, and there is no historical record or evidence of PCE use associated with the former Nyanza industrial operations.

To address these data gaps, MassDEP and EPA recommend a robust sampling program (including collection of indoor air & sub slab soil gas from the ground floor of 10 Main St, and groundwater sampling immediately downgradient of 10 Main St). Installation of an overburden monitoring well immediately downgradient of 10 Main Street may be required for this purpose if historic wells ARC-1, B-2 and B-7 no longer exist.

If a robust sampling program is not implemented to address these data gaps, then the mitigation measures proposed for 10 Main Street must be re-evaluated based on the assumption that the 2011 indoor air and sub-slab soil gas collected at 20 Main St, and historic groundwater data collected downgradient of 10 Main Street *are representative of current conditions at 10 Main Street and that a PCE source area may exist immediately downgradient or within/beneath 10 or 20 Main Street*.

It should also be noted that the shallow water table (assumed to be less than 5 feet below the building foundation) poses increased risk for vapor intrusion.

Comments re: proposed vapor mitigation measures for 10 Main Street:

The RAM proposes installation of a 20-mil Drago wrap vapor barrier or equivalent directly on top of the foundation slab at 10 Main Street and topped with a concrete topper. We have a few concerns with this proposal:

- Thickness and composition of the proposed vapor barrier membrane:

  - The proposed 20-mil thickness is significantly thinner than that recommended for vapor barriers in MassDEP's Vapor Intrusion Guidance document (WSC#16-435). MassDEP recommends that vapor barrier membranes be at least 40 to 60 mil in thickness, and preferably 60 to 100 mil in thickness.

  - According to MassDEP's VI guidance doc, the selected vapor barrier membrane should also be chemically resistant to (should not significantly absorb) VOCs present in soil gas and groundwater beneath the building. Documentation should be provided demonstrating that the composition of the selected vapor barrier will be able to withstand VOC permeation.

- Lack of permeable/open cavity layer:

  - The RAM proposes installation of a vapor barrier directly on top of the existing foundation slab at 10 Main Street, without any underlying permeable layer. This is not consistent with MassDEP's vapor intrusion guidance document, which recommends that "*vapor barriers intended to address VOCs should be installed above a permeable layer that allows soil vapors to migrate freely to the perimeter of the building or up and out through passive or active vent piping.*"

  - Similarly, EPA's OSWER Publication 9200.2-154 "Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air" does not recommend passive vapor barriers as stand-alone technologies.

  - The concern is that, without an underlying permeable layer, VOC vapors may concentrate beneath the vapor barrier and breach the vapor barrier at a small opening or tear in the vapor barrier, or by permeation through the vapor barrier.

- Active mitigation system: According to MassDEP's VI guidance document, active sub-slab depressurization systems are the recommended method to address the vapor intrusion pathway *in all* cases and particularly if an Imminent Hazard exists. A passive vapor

mitigation system, or a stand-alone vapor barrier*, should not be proposed unless subsurface contaminant concentrations are demonstrated to be low*. MassDEP and EPA do not believe we have enough current data to rule out the need for active ventilation system.

- Shallow water table:

  - Design of the vapor mitigation system should take into account the shallow water table (which may be within 5 feet of the building foundation). A shallow water table may both pose increased risk for vapor intrusion and also limit the effectiveness of a sub-slab ventilation system.

  - If a shallow water table prevents installation of an active or passive sub slab depressurization system, perhaps an aerated floor (placed on top of the concrete slab, but beneath the vapor barrier) could be installed to provide an open cavity through which the contaminated soil gas could be vented. We understand there are some aerated floor technologies that are only 2" in height and relatively easy to unroll and install.

MassDEP and EPA strongly recommend that the vapor barrier and sub-barrier ventilation system be designed and installed by a trained, experienced, and certified installer, under the oversight of an environmental professional.