MEMO

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From:

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Arcadis Project No.:

30050315

Subject:

CSM and Requested Property Specific Monitoring Program for Eleven Offsite Mitigation Properties related to the Ford Livonia Transmission Plant, 36200 Plymouth Road, Wayne County, Michigan EGLE Site ID No.: 82002970

On behalf of Ford Motor Company (Ford), this memorandum (memo) has been prepared by Arcadis of Michigan, LLC for the Livonia Transmission Plant (LTP) site (the site) to summarize the residential conceptual site models (CSMs). In addition, Ford is requesting approval for a property specific monitoring program at eleven off-site residential properties described herein. Nine of the properties discussed have been mitigated and two of the properties have not been mitigated. The information provided in this memo and the attached slide deck was discussed with the Michigan Department of Environmental, Great Lakes, and Energy (EGLE) on October 5, 2021 and includes data collected through December 2021.

The structures at the eleven properties were evaluated using a multiple lines of evidence approach to determine that mitigation is not warranted at this time. The data reviewed included the following:

- The concentration of vinyl chloride (VC) in groundwater at surrounding wells, including at least one upgradient well
- The sub-slab data collected at the property

Mitigated Properties

34380 Capitol - Basement and Attached Garage

The structures at this property consist of a basement and attached garage that have been mitigated. The structure is located outside of the groundwater plume buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-90S, is located approximately 11 feet northwest of the structure. VC was not detected at this well during ten groundwater sampling events.

- The closest upgradient shallow monitoring well, MW-136S, is located approximately 119 feet southwest of the structure. The VC concentration in this well has ranged between non-detect and 1.4 µg/L during ten groundwater sampling events.

- The ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All eleven sub-slab samples collected from beneath the attached garage at SSMP-1 have been non-detect for VC with detection levels of 3.4 micrograms per cubic meter (µg/m^3) or less, which is an order of magnitude below the Residential Sub-Slab Volatilization to Indoor Air Criteria (VIAC) of 54 µg/m^3. Samples were collected on October 18, 2018; March 1, 2019; June 12, 2019; September 25, 2019; December 10, 2019; January 14, 2020; February 18, 2020; July 21, 2020; August 28, 2020; November 19, 2020; and January 14, 2021.

- The eleven rounds of sub-slab samples that were collected from beneath the garage demonstrates that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-90S and MW-136S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-136S exceeds 1.4 µg/L or the VC concentration at MW-90S exceeds the groundwater screening level of 1.0

µg/L, quarterly sub-slab sampling at SSMP-1 and within the Cupolex layer at SP-1 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration.

- If the VC concentration in any sub-slab sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

34480 Capitol – Crawlspace, Slab Living Area, and Detached Garage

The structures at this property consist of a crawlspace, slab living area, and detached garage that have been mitigated. The residential structure is located on the groundwater plume buffer, and the detached garage is located outside the groundwater plume buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-168S, is located approximately 21 feet south of the residential structure. The VC concentration at this well has been non-detect during all ten groundwater sampling events.

- The closest upgradient shallow monitoring well, MW-171S, is located approximately 160 feet southwest of the residential structure. The VC concentration at this well has been non-detect during all ten groundwater sampling events.

- The ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All four rounds of sub-slab samples collected from beneath the detached garage at SSMP-1 and from beneath the slab living area at SSMP-2 (2 pre-mitigation and 2 post mitigation) have been non-detect for VC with detection levels of 3.4 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3. Samples were collected on October 30, 2018, March 5, 2019, August 14, 2019, and January 9, 2020.

- The four rounds of sub-slab samples that were collected from beneath the garage and beneath the slab living area demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-168S and MW-171S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-168S or at MW-171S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-1 and SSMP-2 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration.

- If the VC concentration in any sub-slab sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

12036 Brewster – Basement, Slab Living Area, Attached Garage, and Shed

The structures at this property consist of a basement, an attached garage, a slab on grade porch, and a shed that have been mitigated. The structures are located inside the 100-foot buffer.

Groundwater Data Summary

- The closest upgradient shallow monitoring well, MW-92S, is located approximately 15 feet west of the attached garage. The VC concentration at this well has been non-detect during all ten groundwater sampling events.

- The closest shallow monitoring well inward to the groundwater plume, MW-192S, is located approximately 32 feet north of the structure. The VC concentration at this well has been non-detect during all nine groundwater sampling events.

- The ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All four rounds of sub-slab samples collected from beneath the attached garage, at SSMP-1 have been non-detect for VC with detection levels of 3.3 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3. Pre-mitigation samples were collected on March 1, 2019; and May 31, 2019. Post-mitigation samples were collected on September 5, 2019; and January 30, 2020.

- The four rounds of sub-slab samples that were collected from beneath the attached garage (2 rounds of pre-mitigation) demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-192S and MW-192S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-192S or at MW-154S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-1 will resume and O&M of the basement Retro Coat will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.

- If the VC concentration in any sub-slab sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

12101 Brewster – Crawlspace, Slab Living Area, and Attached Garage

The structures at this property consist of a crawlspace an attached garage, and slab on grade living areas that have been mitigated. The structures are located inside the 100-foot buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-171S, is located approximately 35 feet southwest and upgradient of the structure. The VC concentration at this well has been below the screening level of 1.0 µg/L during all nine groundwater sampling events.

- Shallow monitoring well, MW-168S, is located approximately 63 feet east of the structure. The VC concentration at this well has been below the screening level of 1.0 µg/L during all nine groundwater sampling events.

- The nine rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All three rounds of sub-slab samples collected from beneath the attached garage, at SSMP-1 and SSMP-2 have been non-detect for VC with detection levels of 3.3 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3. Pre-mitigation samples were collected on March 20, 2019. Post-mitigation samples were collected on August 14, 2019 and January 22, 2020.

- The three rounds of sub-slab samples that were collected from beneath the attached garage (1 round of pre-mitigation at two locations) demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the

structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-168S and MW-171S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-168S or at MW-171S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-2 and beneath the crawlspace barrier at SP-8 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.

- If the VC concentration in any sub-slab or sub-membrane sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

12141 Brewster – Crawlspace, Slab Living Area, Attached Garage, and Detached Garage

The structures at this property consist of a crawlspace, an attached garage, a slab on grade living area, and a detached garage that have been mitigated. The structures are located outside the 100-foot buffer.

Groundwater Data Summary

- The closest upgradient shallow monitoring well, MW-95S, is located approximately 76 feet southwest of the structure. The VC concentration at this well has ranged between non-detect and 1.1 µg/L during all ten groundwater sampling events.

- The closest shallow monitoring well, MW-160S, is located approximately 72 feet east of the structure. The VC concentration at this well has been non-detect all ten groundwater sampling events.

- Additionally, shallow monitoring well, MW-141S, is located approximately 138 feet southeast of the structure. The VC concentration at this well has been non-detect during all ten groundwater sampling events.

- The ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All seven rounds of sub-slab samples collected from beneath the attached garage, at SSMP-1, and one round collected from beneath the slab living area, at SSMP-2, have been non-detect for VC with detection levels of 3.6 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3. Pre-mitigation samples were collected from SSMP-1 on October 25, 2018 and March 13, 2019. Post-mitigation samples were collected from SSMP-1 on May 22, 2019; October 25, 2019; January 3, 2020; July 21, 2020; and September 16, 2020. Post-mitigation samples were collected from SSMP-2 on September 16, 2020.

- The seven rounds of sub-slab samples that were collected from beneath the attached garage (2 round of pre-mitigation) demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-95S, MW-141S, and MW-160S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-95S exceeds 1.1 µg/L or the VC concentration at MW-141S or at MW-160S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-1, SSMP-2 and beneath the crawlspace barrier at SP-5 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.

- If the VC concentration in any sub-slab or sub-membrane sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

12131 Boston Post – Basement, Crawlspace, Attached Garage, and Shed

The structures at this property consist of a basement and crawlspace with an attached garage and a shed that have been mitigated. The structures are located outside of the groundwater plume buffer.

Groundwater Data Summary

- The closest upgradient shallow monitoring well, MW-95S, is located approximately 21 feet west of the home. The VC concentration at this well has ranged between non-detect and 1.1 µg/L during all ten groundwater sampling events.

- Shallow monitoring well, MW-117S, is located approximately 149 feet south of the structures. The VC concentration in this well has ranged between non-detect and 1.1 µg/L during all ten groundwater sampling events

- Additionally, shallow monitoring well, MW-141S, is located approximately 95 feet east of the structure. The VC concentration at this well has been non-detect during all ten groundwater sampling events.

- The ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All five sub-slab samples collected from beneath the attached garage at SSMP-1 have been non-detect for VC with detection levels of 3.2 micrograms per cubic meter (µg/m^3) or less, which is an order of magnitude below the Residential Sub-Slab Volatilization to Indoor Air Criteria (VIAC) of 54 µg/m^3. Pre-mitigation samples were collected on November 8, 2018 and February 19, 2019. Post mitigation samples were collected on May 3, 2019; August 1, 2019; and January 21, 2021.

- The five rounds of sub-slab samples that were collected from beneath the attached garage (2 round of pre-mitigation) demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-95S, MW-117S, and MW-141S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-95S or MW-117S exceeds 1.1 µg/L or the VC concentration at MW-141S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-1, within the Cupolex at SP-3, and beneath the barrier at SP-7 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration.

- If the VC concentration in any sub-slab sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

12089 Boston Post - Basement and Detached Garage

The structures at this property consist of a basement and a detached garage that have been mitigated. The structures are located outside the 100-foot buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-117S, is located approximately 10 feet north of the basement structure. The VC concentration at this well has ranged between non-detect and 1.1 µg/L during all ten groundwater sampling events.

- The closest upgradient shallow monitoring well, MW-157S, is located approximately 132 feet southwest of the detached garage. The VC concentration at this well has been non-detect during all nine groundwater sampling events.

- Additionally, shallow monitoring well, MW-159S, is located approximately 72 feet southeast of the basement structure. The VC concentration at this well has been non-detect during all nine groundwater sampling events.

- The nine to ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All five rounds of sub-slab samples collected from beneath the basement (3 rounds pre-mitigation and 2 rounds post mitigation at SSMP-1 and SSMP-2) and four rounds collected from beneath the detached garage (SSMP-3), have been non-detect for VC with detection levels of 3.4 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3 (except the February 21, 2019 sample at SSMP-2, which had an elevated detection level of 61 µg/m^3). Pre-mitigation sub-slab samples were collected from the basement at SSMP-1 and SSMP-2 on October 9, 2018; February 21, 2019; and April 24, 2019. Post-mitigation sub-slab samples were collected from the basement at SSMP-1 and SSMP-2 on July 10, 2019; and January 17, 2020. Sub-slab samples were collected from the detached garage at SSMP-3 on February 21, 2019; April 24, 2019; July 11, 2019; and January 17, 2020.

- The five rounds of sub-slab samples that were collected from beneath the basement and detached garage (3 round of pre-mitigation at 2 locations beneath the basement) demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan

presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-117S, MW-157S, and MW-159S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-117S exceeds 1.1 µg/L or the VC concentration at MW-157S or at MW-159S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-1, SSMP-2, and SSMP-3 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.

- If the VC concentration in any sub-slab or sub-membrane sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

34990 Beacon – Basement, Crawlspace, Detached Garage, and Shed

The structures at this property consist of a basement, crawlspace, and shed that have been mitigated and a detached garage that has not been mitigated. The structures are located outside the 100-foot buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-109S, is located approximately 13 feet north of the crawlspace structure. The VC concentration at this well has been below the screening level of 1.0 µg/L during all ten groundwater sampling events.

- The closest upgradient shallow monitoring well, MW-74S, is located approximately 289 feet west of the structures. The VC concentration at this well has been non-detect during all ten groundwater sampling events.

- Cross-section A-A' (attached slide deck) shows the up and down gradient groundwater profile and lithology beneath this property. The groundwater data collected to date indicates that low level vinyl chloride groundwater impacts are present at monitoring well MW-74 while the shallow monitoring well MW-74S, located next to monitoring well MW-74, does not have vinyl chloride groundwater impacts. The down gradient monitoring well MW-109S, which is located on the property, shows no evidence of vinyl chloride impacts. In addition, the shallow monitoring wells (MW-158S, MW-89S, MW-159S, MW-157S, MW-104S, MW-155S, and MW-154S) downgradient of monitoring well MW-109S do not show evidence of vinyl chloride. The data suggests that a shallow non impacted zone of groundwater is likely present which is consistent with the data presented in the site wide CSM.

- The ten rounds of GW sampling demonstrate that a groundwater source for vapor intrusion is not present at this property.

Vapor Data Summary

- All five rounds of indoor air samples collected from within the basement and the main floor of the home (3 rounds pre-mitigation and 2 rounds post mitigation); two pre-mitigation rounds collected from within the crawlspace; and five pre-mitigation rounds collected from within the detached garage have been non-detect for VC with detection levels of 0.47 µg/m^3 or less, which is an order of magnitude below the Residential Indoor Air RAISL of 1.6 µg/m^3 (except the October 2, 2019 sample on the main floor, which had a detection level of 0.88 µg/m^3 and inside the detached garage, which had a detection level of 1.1 µg/m^3). The five sampling events occurred on December 19, 2018; February 27, 2019; August 1, 2019; and November 19, 2020.

- The five rounds of indoor air samples that were collected from within the basement and main floor of the home (3 round of pre-mitigation) demonstrate that vapor intrusion is not occurring.

The groundwater data indicates that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-74S and MW-109S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-74S or at MW-109S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-membrane sampling beneath the crawlspace barrier at SP-6 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.

- If the VC concentration in any sub-membrane sample exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

34380 Beacon – Crawlspace, Slab, Detached Garage, and Shed

The structures at this property consist of a crawlspace, a slab on grade living area, a detached garage, and a shed that have been mitigated. The structures are located inside the 100-foot buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-150S, is located approximately 48 feet north of the structures. The VC concentration at this well has been below the screening level of 1.0 µg/L during all nine groundwater sampling events.

- The closest upgradient shallow monitoring well, MW-127S, is located approximately 100 feet west of the structures. The VC concentration at this well has ranged between non-detect and 2.7 µg/L during all ten groundwater sampling events.

- Additionally, shallow monitoring well, MW-149S, is located approximately 148 feet northwest of the structures. The VC concentration at this well has ranged between non-detect and 2.5 µg/L during all ten groundwater sampling events.

- The nine rounds of GW sampling at MW-150S demonstrate that a groundwater source for vapor intrusion is not present at this property.

Sub-Slab Vapor Data Summary

- All three rounds of sub-slab samples collected from beneath the detached garage at SSMP-1 and one post-mitigation sample collected from beneath the slab living area at SSMP-2 have been non-detect for VC with detection levels of 3.3 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3. Sub-slab samples were collected from the detached garage at SSMP-1 on February 22, 2019; May 22, 2019; and November 11, 2020. A post-mitigation sub-slab samples was collected from the slab at SSMP-2 on November 11, 2020.

- The three rounds of sub-slab samples that were collected from beneath the detached garage demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, on-going mitigation at the structure is not warranted at this time. The mitigation fan will be turned off, and O&M will be discontinued. The mitigation system will be left in place, and a property specific monitoring plan presented below will be implemented to determine if future operation of the mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Perform two rounds of quarterly rebound sampling beneath the slab living area at SSMP-2 and beneath the crawlspace barrier at SP-2 and SP-4.

- Continue quarterly groundwater monitoring at MW-127S, MW-149S, and MW-150S.

The following actions are proposed based on the monitoring results:

- If the VC concentration in any sub-slab or sub-membrane samples exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

- If during any groundwater monitoring event the VC concentration at MW-127S exceeds the historic peak of 2.7 µg/L, the VC concentration at MW-149S exceeds the historic peak of 2.5 µg/L, or the VC concentration at MW-157S or at MW-150S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-2 and sub-membrane sampling at SP-2 and SP-4 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.

- If the VC concentration in any sub-slab or sub-membrane samples exceeds the Residential Sub-Slab VIAC, the mitigation fan will be turned on and O&M will be resumed.

Unmitigated Properties

12121 Boston Post – Basement, Crawlspace, and Detached Garage

The structures at this property consist of a basement, crawlspace, and detached garage that have not been mitigated. The structures are located outside the 100-foot buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-117S, is located approximately 54 feet southeast of the structure. The VC concentration at this well has ranged between non-detect and 1.1 µg/L during all ten groundwater sampling events.

- The closest upgradient shallow monitoring well, MW-159S, is located approximately 170 feet southwest of the structure. The VC concentration at this well has been non-detect during all nine groundwater sampling events.

- Shallow monitoring well, MW-79SR, is located approximately 95 feet east of the structure. The VC concentration at this well has been below the screening level of 1.0 µg/L during all eleven groundwater sampling events.

- Additionally, shallow monitoring well, MW-95S, is located approximately 95 feet northwest of the structure. The VC concentration at this well has ranged between non-detect and 1.1 µg/L during all ten groundwater sampling events.

- Cross-section B-B' (attached slide deck) indicates a consistent geology across this property. Maximum and minimum groundwater levels indicate that there is potential for groundwater to be in contact with the basement floor, however the shallow monitoring wells (MW-95S, MW-117S, MW-157S, and MW-14S) show no evidence of vinyl chloride groundwater impacts above criteria. The downgradient monitoring well MW-79D does have low level vinyl chloride impacts above criteria, but the shallow monitoring well MW-79SR, which is next to monitoring well MW-79D, shows no groundwater impacts. The results from the shallow monitoring well

network indicate that a shallow non-impacted zone of groundwater is likely present, which is consistent with the data presented in the site wide CSM.

The groundwater data indicates that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, mitigation at the structure is not warranted at this time. A property specific monitoring plan is presented below to determine if future installation and operation of a mitigation system will be initiated.

- Install a new monitoring well on the property and begin quarterly groundwater monitoring.
- Continue quarterly groundwater monitoring at MW-79SR, MW-95S, MW-117S, and MW-159S.
- Complete four rounds of sub-slab sampling beneath the detached garage and beneath the basement if sufficient vadose zone is present.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at the new monitoring well, MW-79SR, MW-95S, MW-117S, or MW-159S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at the detached garage and the basement if possible will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level.
- If the VC concentration in any sub-slab sample exceeds the Residential Sub-Slab VIAC, a mitigation system will be installed and O&M will be completed.

12124 Boston Post – Crawlspace and Attached Garage

The structures at this property consist of a crawlspace and an attached garage that have not been mitigated. The structures are located outside the 100-foot buffer.

Groundwater Data Summary

- The closest shallow monitoring well, MW-118S, is located approximately 11 feet northwest of the structure. The VC concentration at this well has been below the screening level of 1.0 µg/L during all ten groundwater sampling events.
- The closest upgradient shallow monitoring well, MW-141S, is located approximately 34 feet west of the structure. The VC concentration at this well has been non-detect during all ten groundwater sampling events.
- Additionally, shallow monitoring well, MW-79SR, is located approximately 73 feet southwest of the structure. The VC concentration at this well has been below the screening level of 1.0 µg/L during all eleven groundwater sampling events.
- The ten to eleven rounds of GW sampling at MW-150S demonstrate that a groundwater source for vapor intrusion is not present at this property.

- Cross-section C-C' (attached slide deck) indicates a consistent geology across this property. Shallow monitoring wells (MW-118S, MW-141S and MW-117S) near or on the property indicate no exceedances of the criteria for vinyl chloride. The closest monitoring well that does exceed the applicable criteria is monitoring well MW-79D, but monitoring well MW-79SR, which is next to monitoring well MW-79D, indicates no shallow groundwater impacts. The results from the shallow monitoring well network upgradient of the property and at the property indicates that a shallow non-impacted zone of groundwater is likely present, which is consistent with the data presented in the site wide CSM.

Sub-Slab Vapor Data Summary

- All four rounds of pre-mitigation sub-slab samples collected from beneath the attached garage have been non-detect for VC with detection levels of 3.4 µg/m^3 or less, which is an order of magnitude below the Residential Sub-Slab VIAC of 54 µg/m^3. Sub-slab samples were collected on October 19, 2018; February 27, 2019; April 17, 2019; and August 7, 2019.

- The four rounds of sub-slab samples that were collected from beneath the attached garage demonstrate that vapor intrusion is not occurring.

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on the property to result in vapor intrusion. Therefore, mitigation at the structure is not warranted at this time. A property specific monitoring plan is presented below to determine if future installation and operation of a mitigation system will be initiated.

Monitoring Plan

The following monitoring is proposed:

- Continue quarterly groundwater monitoring at MW-79SR, MW-118S, and MW-141S.

The following actions are proposed based on the monitoring results:

- If during any groundwater monitoring event the VC concentration at MW-79SR, MW-118S, or MW-141S exceeds the groundwater screening level of 1.0 µg/L, quarterly sub-slab sampling at SSMP-1 will be implemented until the respective groundwater VC concentration is less than the newly established high concentration or is below the groundwater screening level. If the VC concentration in any sub-slab sample exceeds the Residential Sub-Slab VIAC, a mitigation system will be installed and O&M will be completed.

Summary

The groundwater and sub-slab data indicate that a sufficient source of VC is not present beneath the structures on these properties to result in vapor intrusion. Therefore, mitigation at these structures is not warranted at this time. The proposed monitoring of groundwater, and subsequent monitoring of sub-slab vapor when increases in the VC concentration in groundwater occur, is an appropriate method to determine when mitigation should be implemented. Arcadis, on behalf of Ford, respectfully requests EGLE approval of this property specific monitoring program.

Attachments

2021-10-5 Ford LTP EGLE Status Update Meeting, Updated February 23, 2022

Attachment 1

2021-10-5 Ford LTP EGLE Status Update Meeting,

Updated February 23, 2022

ARCADIS Design & Consultancy for natural and built assets

EGLE STATUS UPDATE MEETING

Ford Livonia Transmission Plant, Livonia, Michigan

October 5, 2021

Updated February 23, 2022

Objective

- Demonstrate that Mitigation may be Discontinued at 8 Off-Site Properties Based on CSMs at Individual Properties
- Propose “Rebound” Monitoring to Verify Active Mitigation is Not Necessary at 1 Property where Upgradient Groundwater Exceeds Criteria
- Demonstrate that Mitigation is not required at 2 Properties Based on CSM

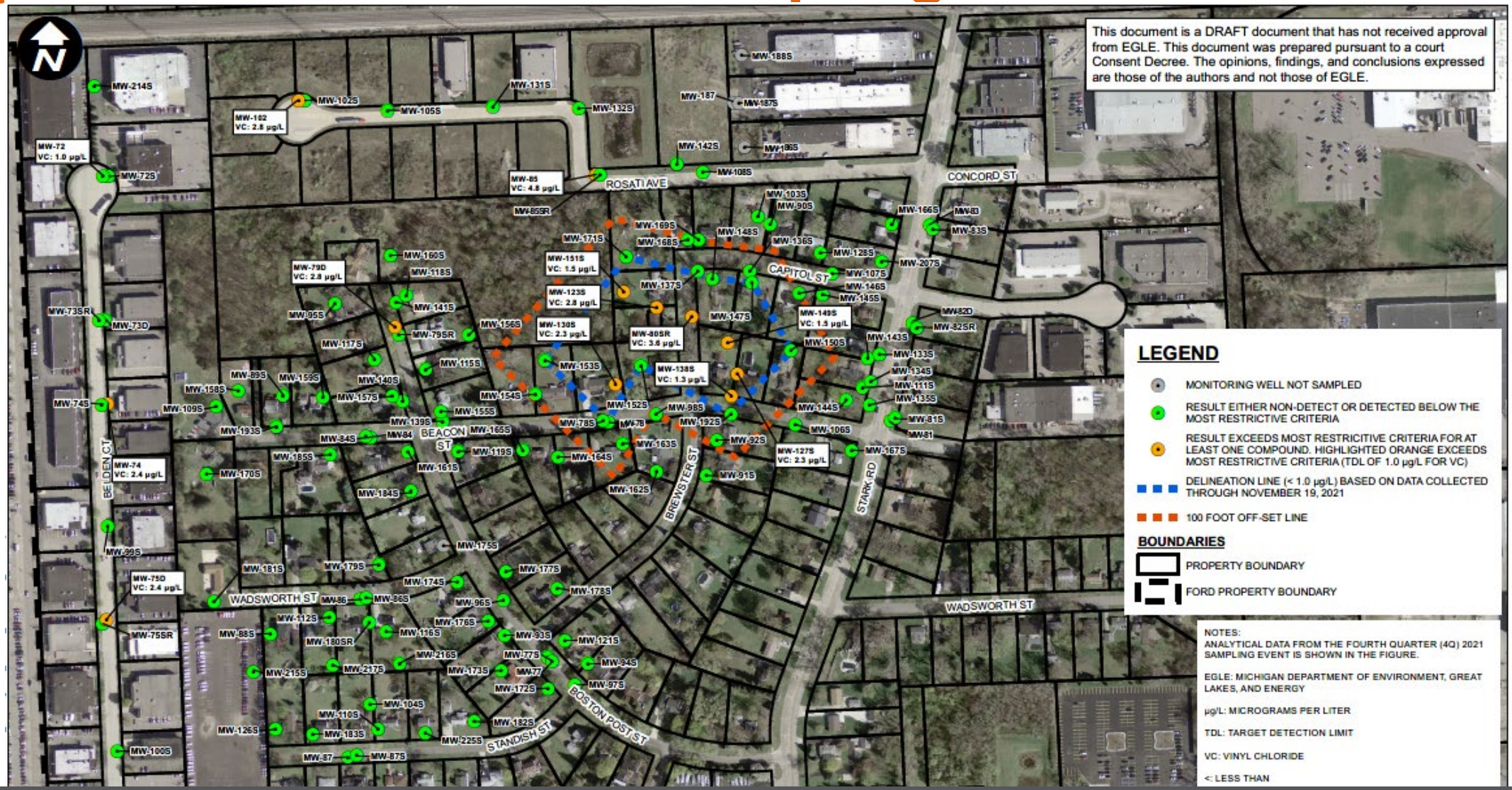
Take the Next Step To Discontinuing Active Mitigation

Agenda

- Results From 4Q 2021 Groundwater Sampling Event
- VI Sampling Summary
- Residential CSMs
  - Begin Turning Off Slab SSD Fans
  - Begin Turning Off Crawlspace Mitigation Fans
  - Begin Turning Off Basement SSD Fan
  - Propose “Rebound” Sub-Slab/Sub-Membrane Sampling Where Upgradient Groundwater Exceeds Criteria
  - Propose No Mitigation Based on GW and/or SS data
  - Propose O&M Reduction at Detached Garages and Sheds
  - Leave Mitigation Systems in Place

4Q 2021 Groundwater Sampling Results

ARCADIS Design & Consultancy for natural and built assets



- 2,007 total groundwater samples collected to date in the residential area
- 5-20 rounds of samples have been collected at each location
- Shallow Groundwater vinyl chloride (VI) concentrations range from non-detect to 3.6 µg/L during 4Q 2021

Extensive Characterization - VI Sampling

LEGEND

- ELEVEN ROUNDS OF VI SAMPLING COMPLETED
- SEVEN ROUNDS OF VI SAMPLING COMPLETED
- SIX ROUNDS OF VI SAMPLING COMPLETED
- FIVE OR MORE ROUNDS OF VI SAMPLING COMPLETED
- FOUR ROUNDS OF VI SAMPLING COMPLETED
- THREE ROUNDS OF VI SAMPLING COMPLETED
- TWO ROUNDS OF VI SAMPLING COMPLETED
- PROPERTIES TO BE DISCUSSED
- PROPERTIES WITH APPROVED CSM
- VINYL CHLORIDE EXCEEDANCE NOT RELATED TO VAPOR INTRUSION
- PROPERTY BOUNDARIES
- FORD PROPERTY BOUNDARY

- 3,408 total Sub-slab, indoor air, ambient air, and duplicate samples and 60 sump samples collected to date
- 2-10 rounds of samples have been collected at each location
- No VI related air exceedance in SS or IA
- All data demonstrates that VI is not occurring

Properties with Approved and Proposed CSMs

LEGEND

- MITIGATION SYSTEM OPERATING
- PROPERTIES WITH APPROVED CSM
- PROPERTIES TO BE DISCUSSED
- PROPERTY BOUNDARIES

Property-Specific CSMs

- **4 Mitigated Properties with VC in upgradient GW less than or near 1 ppb**
  - 34380 Capitol
  - 34480 Capitol
  - 12036 Brewster
  - 12101 Brewster
- **1 Mitigated Property with VC in upgradient GW greater than 1 ppb**
  - 34380 Beacon
- **4 Mitigated Properties with VC in GW less than or near 1 ppb – West of Plume**
  - 12141 Boston Post
  - 12131 Boston Post
  - 12089 Boston Post
  - 34990 Beacon
- **2 Unmitigated Properties with VC in GW less than 1 ppb – West of Plume**
  - 12121 Boston Post
  - 12124 Boston Post

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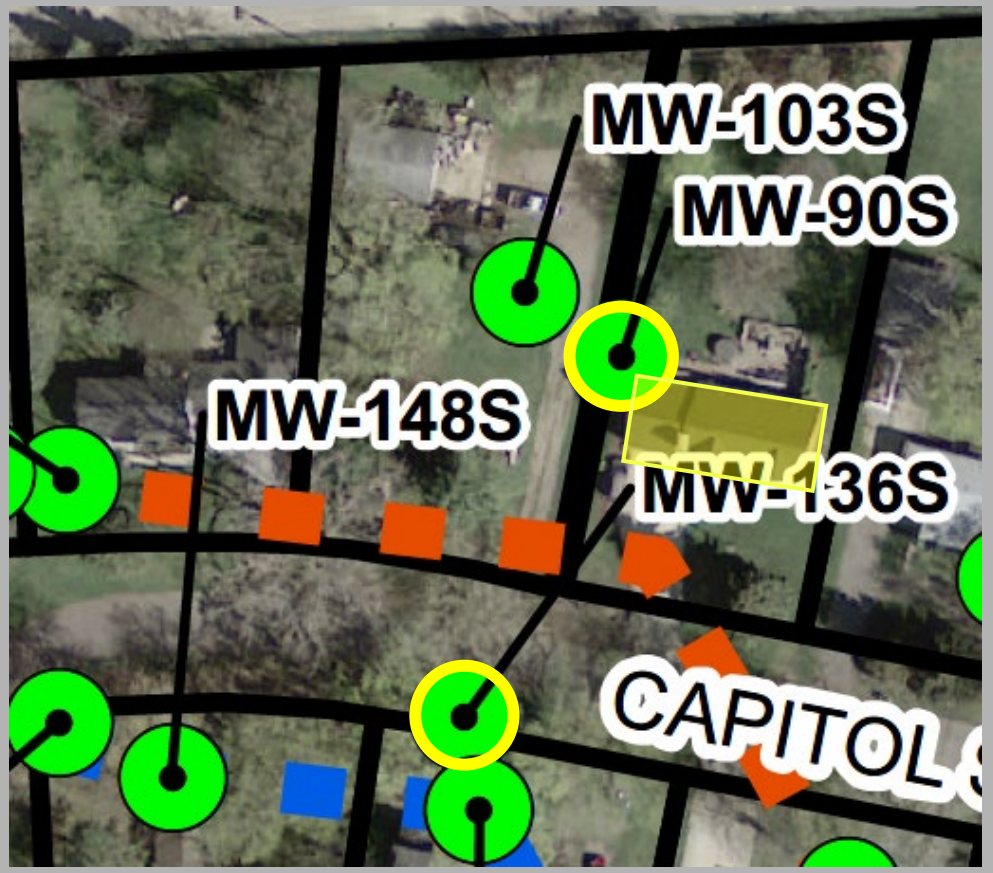
4 Mitigated Properties with VC in Upgradient GW less than or near 1 ppb

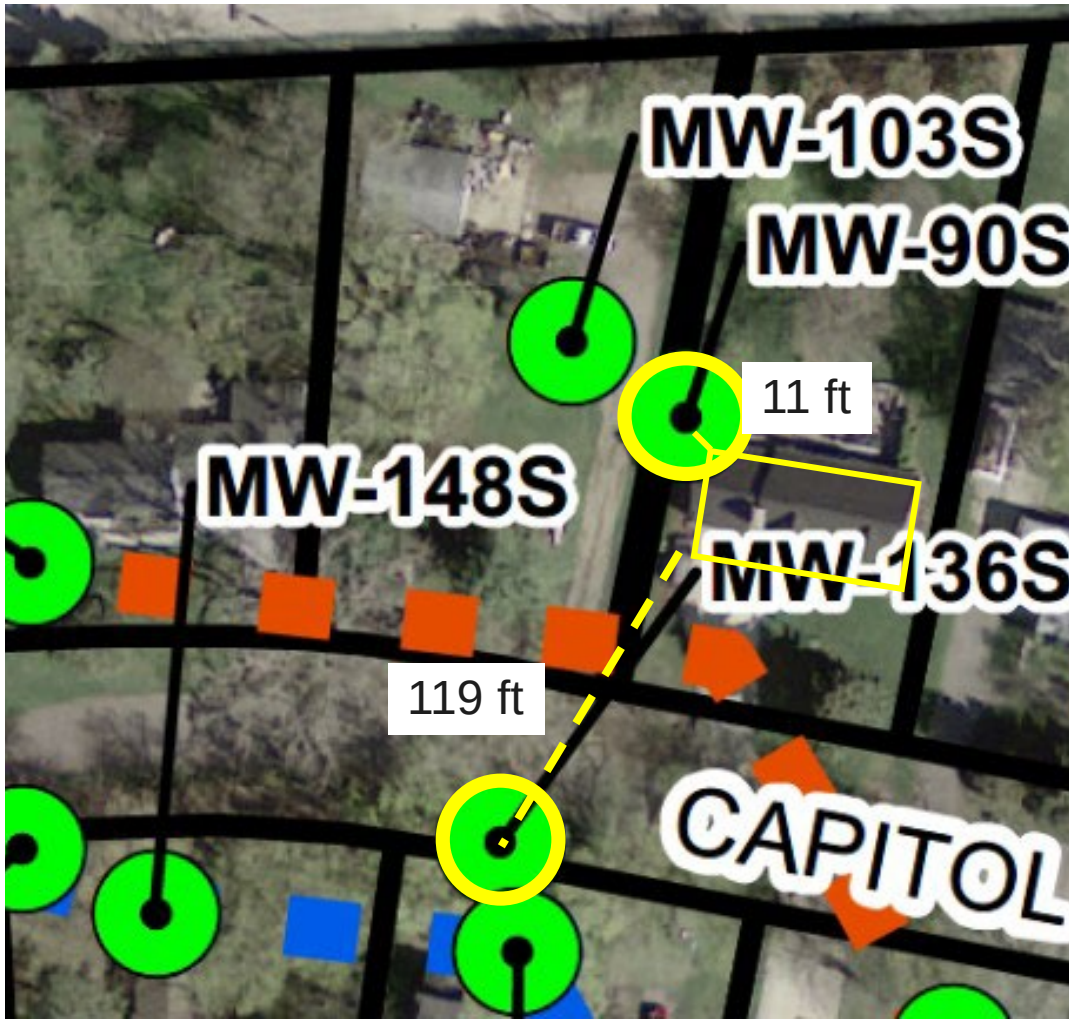
34380 Capitol
34480 Capitol
12036 Brewster
12101 Brewster

34380 Capitol

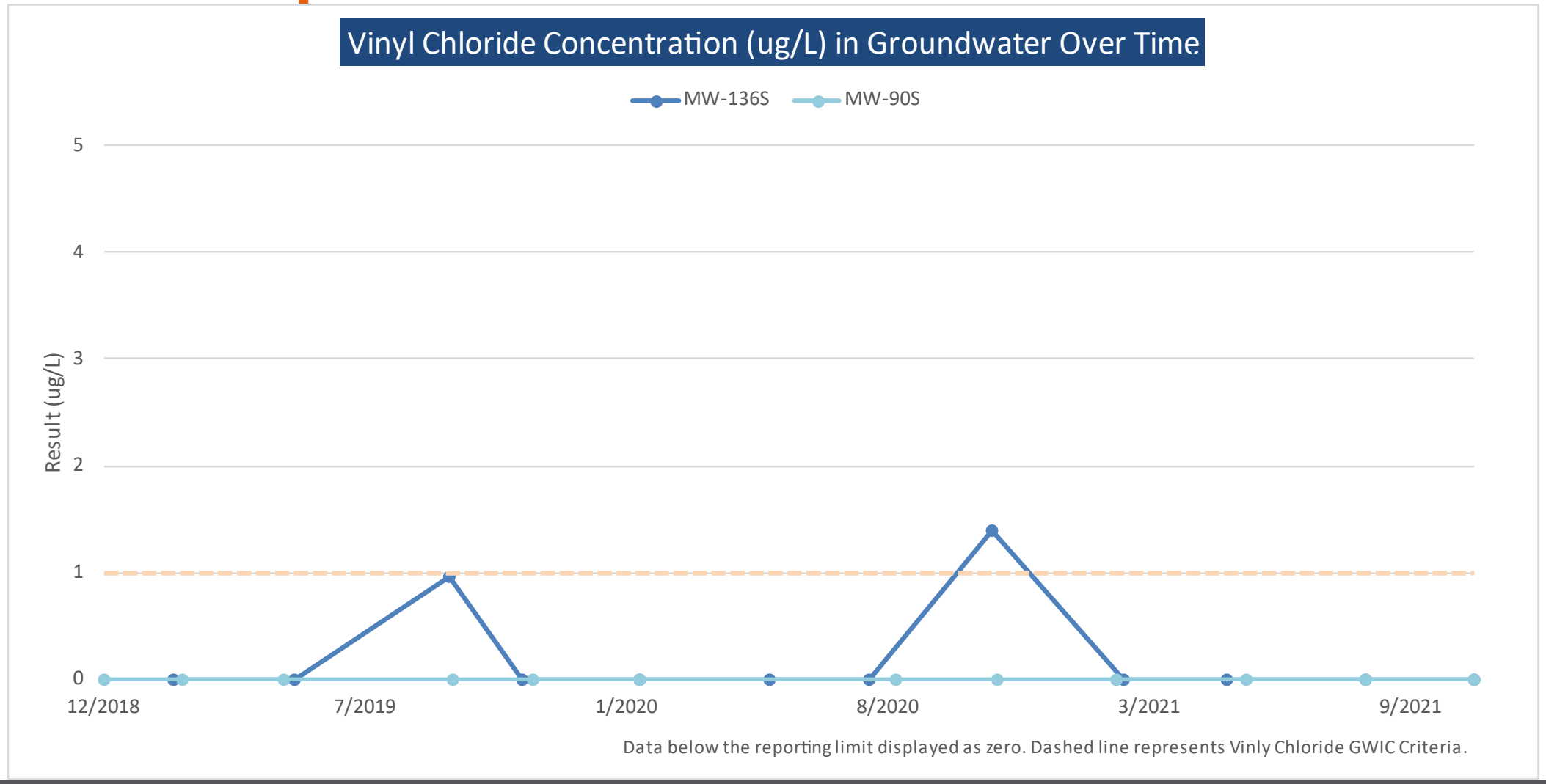
- **Structure is outside the buffer**
  - MW-90S – all 12 rounds ND for VC
  - MW-136S – historic peak 1.4 µg/L
- All **11 Rounds** SS data under attached garage – ND
- Recommendations
  - Basement – Turn off Mitigation and Discontinue O&M of Retro-Coat
  - Attached Garage – Discontinue O&M of Retro-Coat
  - Continue GW sampling (MW-90S and MW-136S)



34380 Capitol – Distance to Surrounding Wells

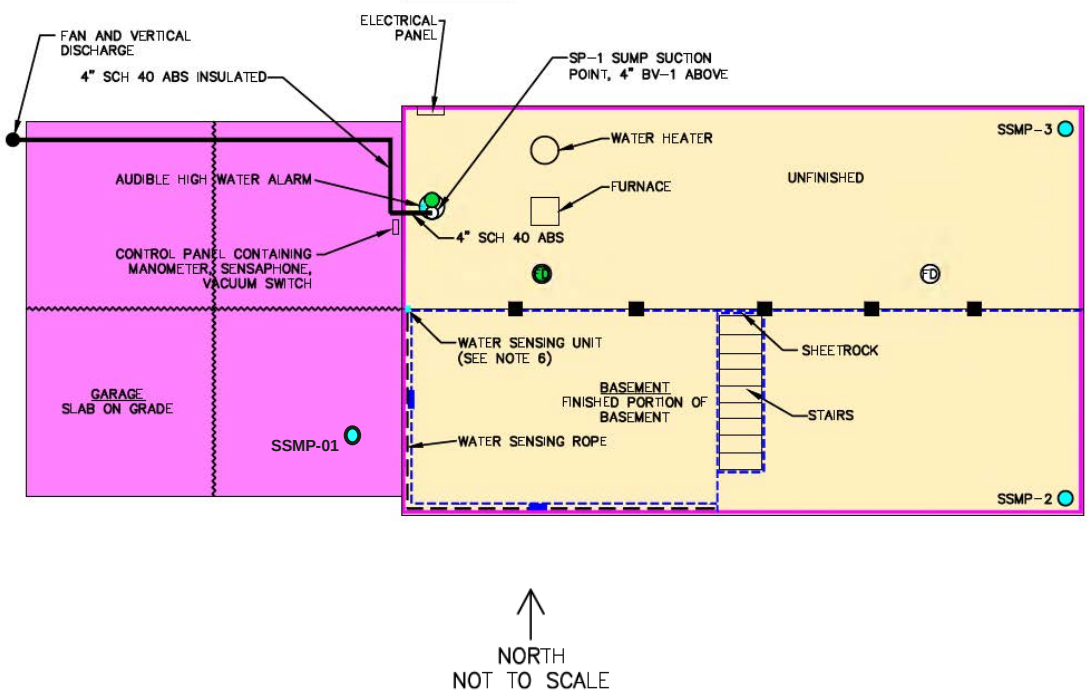


34380 Capitol



12 Sampling Events - One Exceedance of VC Criteria 119 Ft From the Structure

34380 Capitol

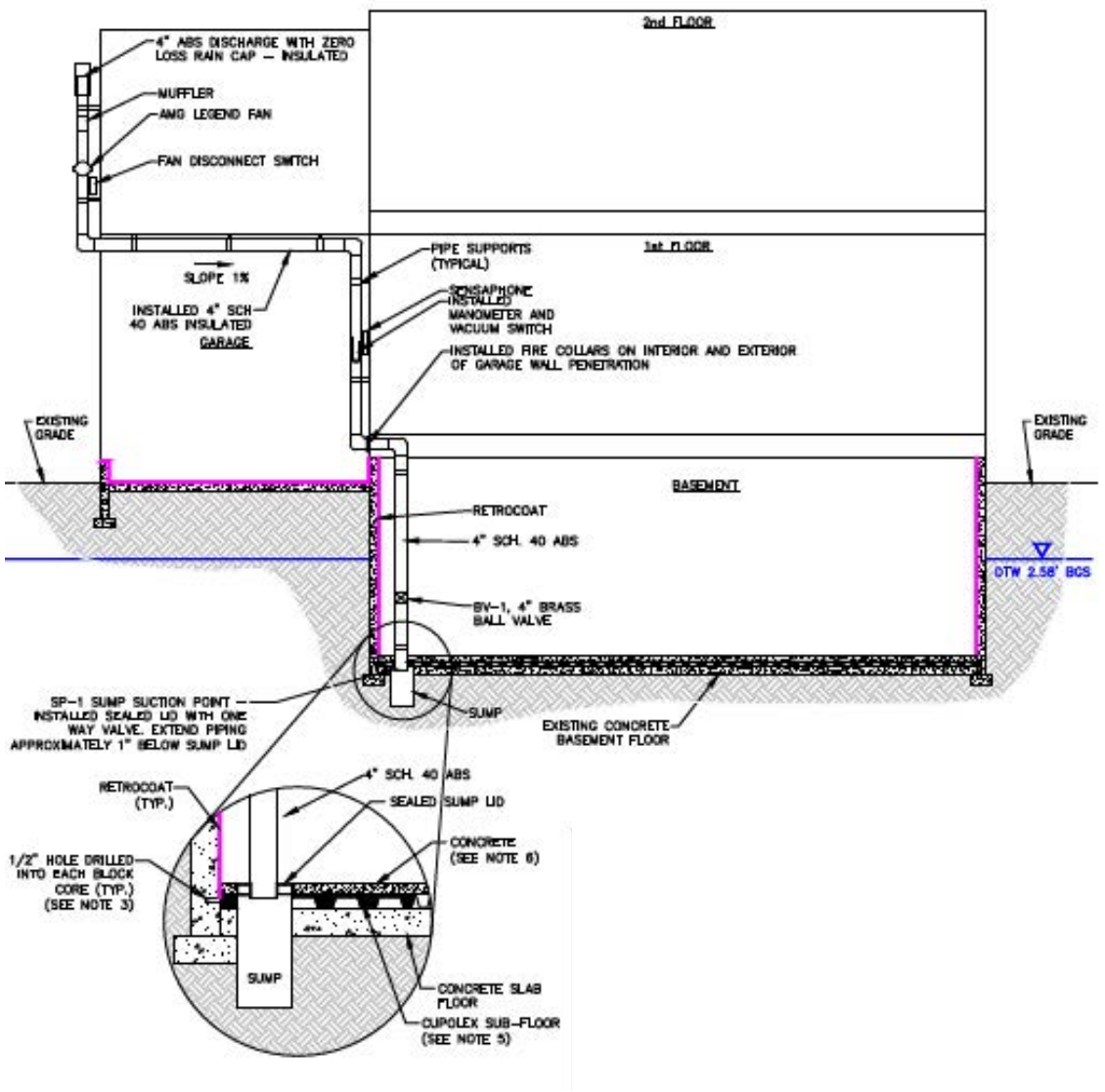


Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m³
Basement Indoor Air (IAB)	10/18/2018	IAB-03	Pre-Mitigation	< 0.42
	3/1/2019	IAB-03		< 0.44
	6/12/2019	IAB-03		< 0.43
		DUP-01		< 0.44
	9/25/2019	IAB-03		< 0.46
	12/10/2019	IAB-03		< 0.45
	1/14/2020	IAB-03		< 0.47
	2/18/2020	IAB-03		< 0.44
	7/21/2020	IAB-03		< 0.43
	8/28/2020	IAB-03		< 0.44
	11/19/2020	IAB-03	Post Mitigation	< 0.45
	1/14/2021	IAB-03		< 0.44
Main Floor Indoor Air (IAF)	10/18/2018	IAF-02	Pre-Mitigation	< 0.46
	3/1/2019	IAF-02		< 0.44
	6/12/2019	IAF-02		< 0.47
	9/25/2019	IAF-02		< 0.46
	12/10/2019	IAF-02		< 0.47
	1/14/2020	IAF-02		< 0.49
	2/18/2020	IAF-02		< 0.48
	7/21/2020	IAF-02		< 0.44
	8/28/2020	IAF-02		< 0.45
	11/19/2020	IAF-02	Post Mitigation	< 0.45
	1/14/2021	IAF-02		< 0.44
Garage Indoor Air (IAG)	10/18/2018	IAG-01	Pre-Mitigation	< 0.40
	3/1/2019	IAG-01		< 0.44
	6/12/2019	IAG-01		< 0.48
	9/25/2019	IAG-01		< 0.48
	12/10/2019	IAG-01		< 0.44
	1/14/2020	IAG-01		< 0.44
	2/18/2020	IAG-01		< 0.46
	7/21/2020	IAG-01		< 0.44
	8/28/2020	IAG-01		< 0.47
	11/19/2020	IAG-01	Post Mitigation	< 0.41
	1/14/2021	IAG-01		< 0.46

Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m³
Sub-Slab Vapor (SSMP)	10/18/2018	SSMP-01	Pre Mitigation	< 3.0
	3/1/2019	SSMP-01		< 3.1
	6/12/2019	SSMP-01		< 3.2
	9/25/2019	SSMP-01		< 3.3
	12/10/2019	SSMP-01		< 3.3
	1/14/2020	SSMP-01		< 3.2
	2/18/2020	SSMP-01		< 3.4
		DUP-03		< 3.4
	7/21/2020	SSMP-01		< 3.4
	8/28/2020	SSMP-01		< 3.4
	11/19/2020	SSMP-01	Post Mitigation	< 3.2
	1/14/2021	SSMP-01		< 3.2
Sump Water	10/17/2018	SUMP-01	Pre Mitigation	< 1.0
	2/28/2019	SUMP-01		< 1.0
	6/12/2019	SUMP-01		< 1.0
	9/25/2019	SUMP-01		< 1.0
	12/10/2019	SUMP-01		< 1.0
	1/14/2020	SUMP-01		< 1.0
	2/17/2020	SUMP-01		< 1.0
	7/21/2020	SUMP-01		< 1.0
	8/28/2020	SUMP-01		< 1.0
	11/19/2020	SUMP-01	Post Mitigation	< 1.0
	1/14/2021	SUMP-01		< 1.0

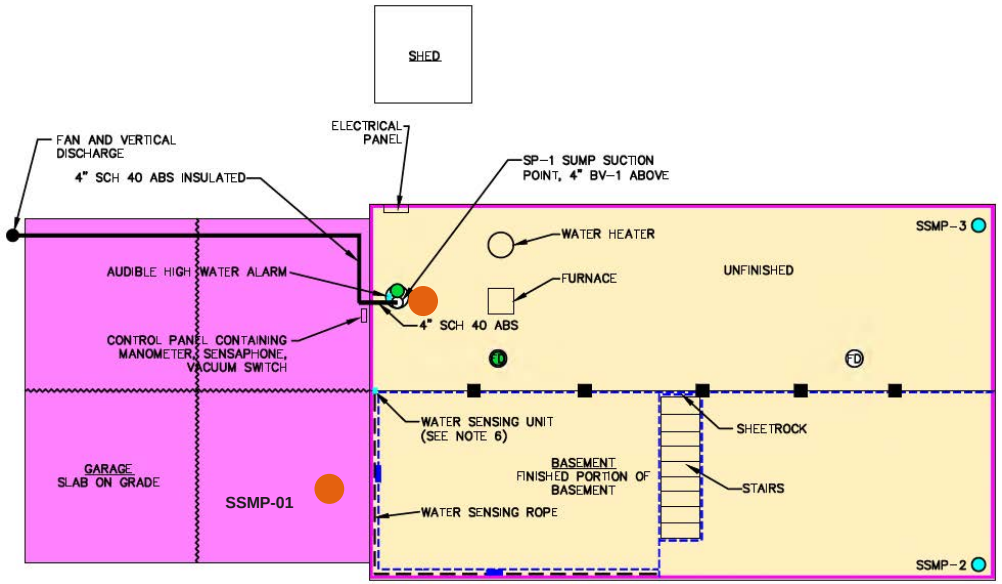
11 Sub-Slab Sampling Events – No Detections

34380 Capitol



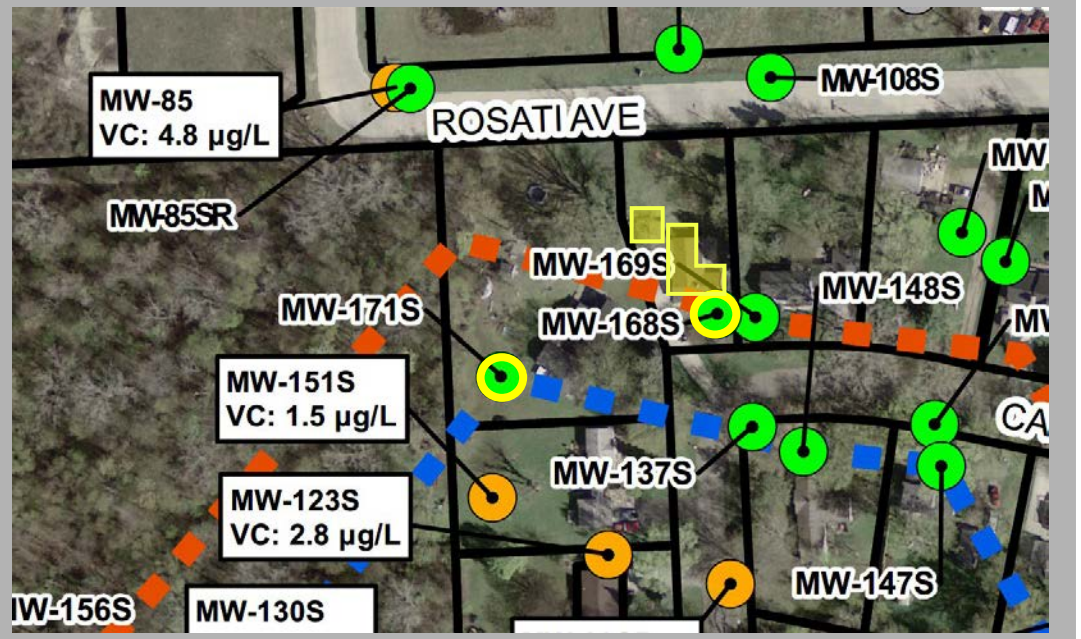
Summary of Recommendations

- Discontinue O&M of attached garage Retro Coat
- Discontinue O&M of basement wall Retro Coat
- Turn off existing SSDS (Cupolex extraction) in basement.
- Continue quarterly GW sampling
  - If GW concentration at MW-90S is greater than criteria or MW-136S is greater than historic peak of 1.4 µg/L ➡ SS sample quarterly at SSMP-1 and within Cupolex at SP-1 until GW decreasing
  - If SS sample at SSMP-1 or SP-1 exceeds residential sub-slab VIAC ➡ Restart existing SSDS and resume O&M of Retro Coat in basement and garage
  - Leave mitigation system in place.

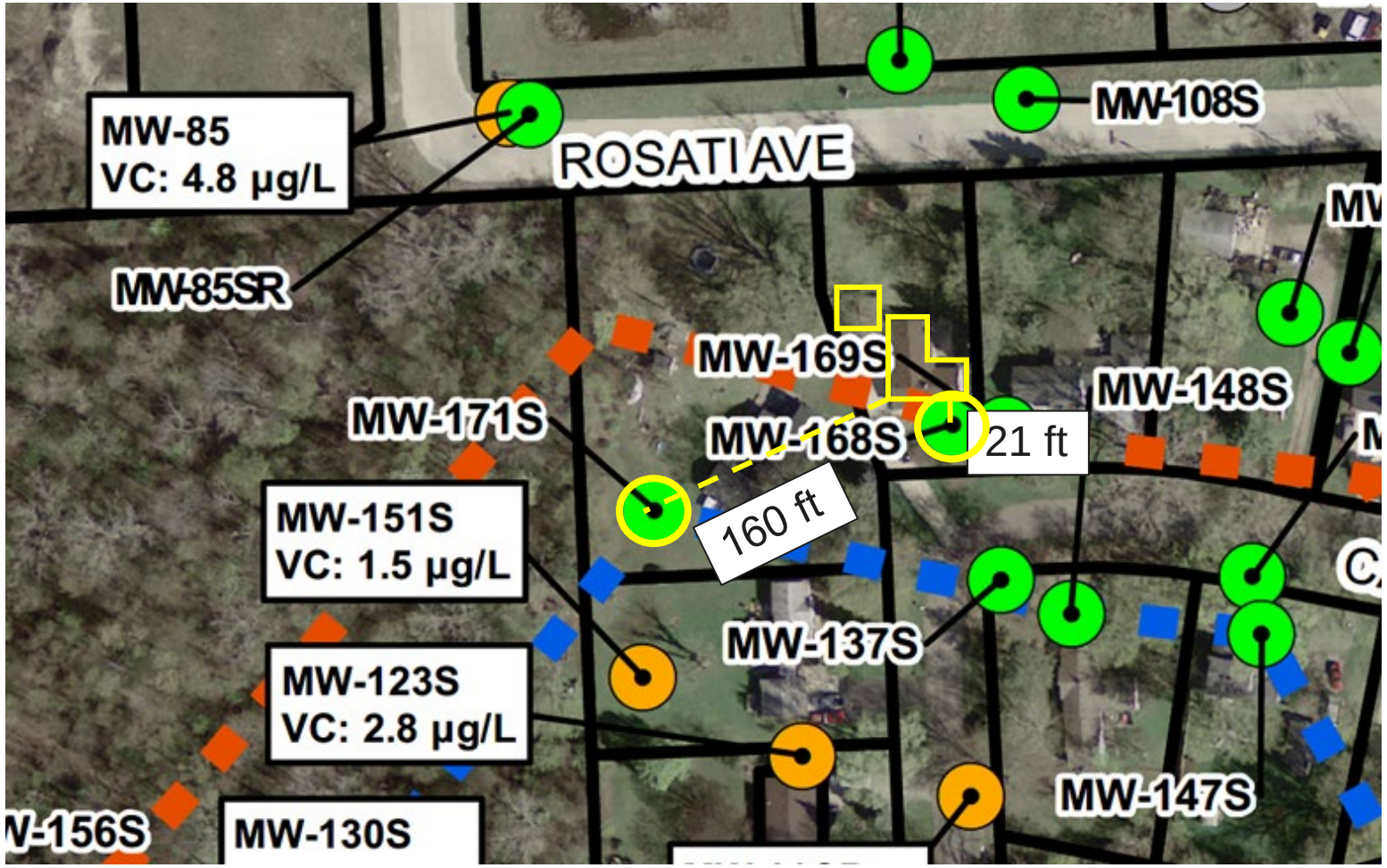


34480 Capitol

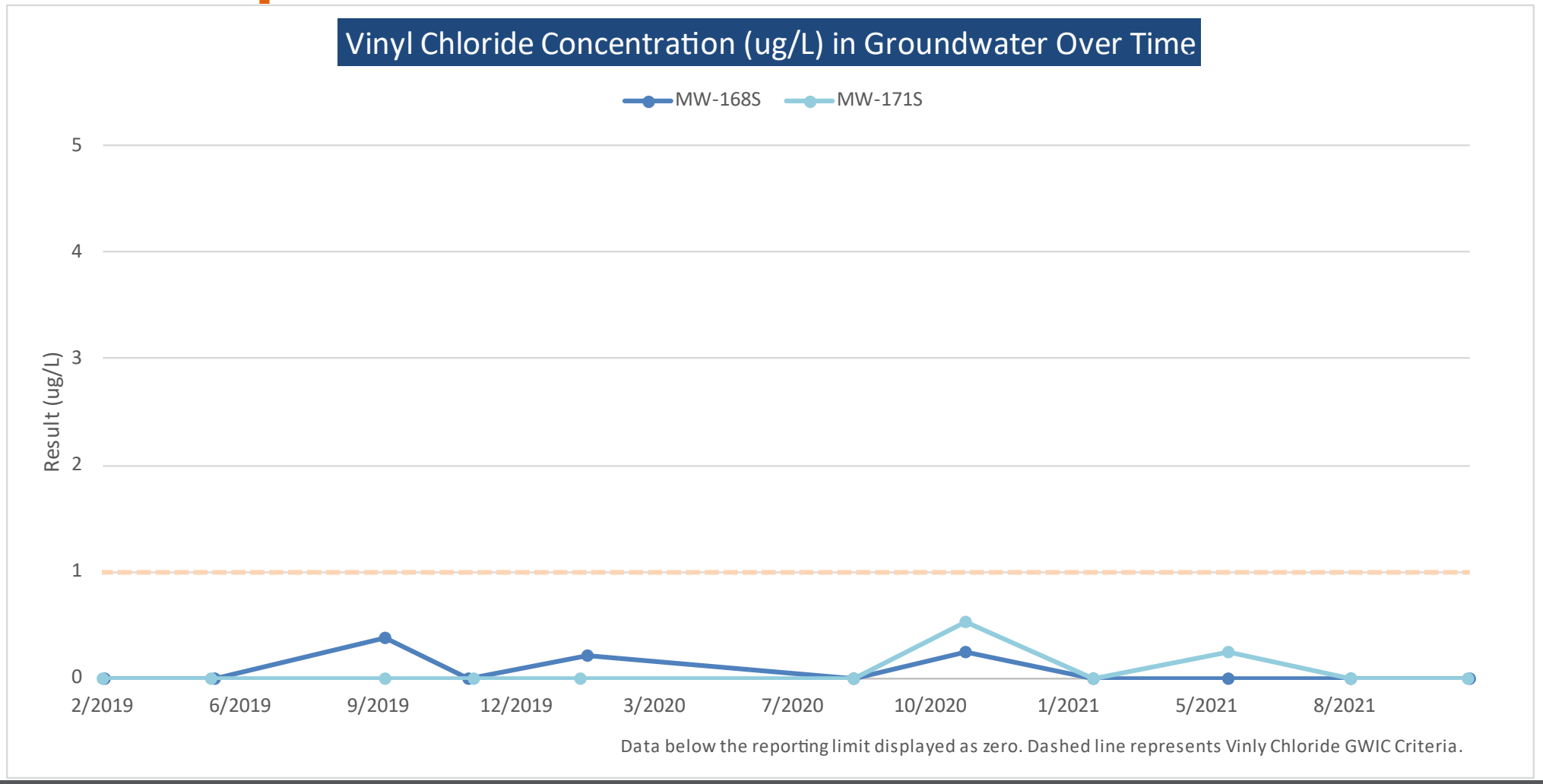
- **Structure on buffer boundary**
  - **MW-168S – all 11 rounds below criteria**
  - **MW-171S – all 11 rounds below criteria**
- All 4 Rounds SS data under living area– ND
  - 2 pre-mitigation and 2 post mitigation
- All 4 Rounds SS data under garage – ND
- Recommendations
  - Garage – Discontinue O&M of Retro Coat
  - Crawlspace and Slab Living Area – Turn off SMD/SSD
  - Continue GW sampling (MW-168S and MW-171S)



34480 Capitol – Distance to Surrounding Wells

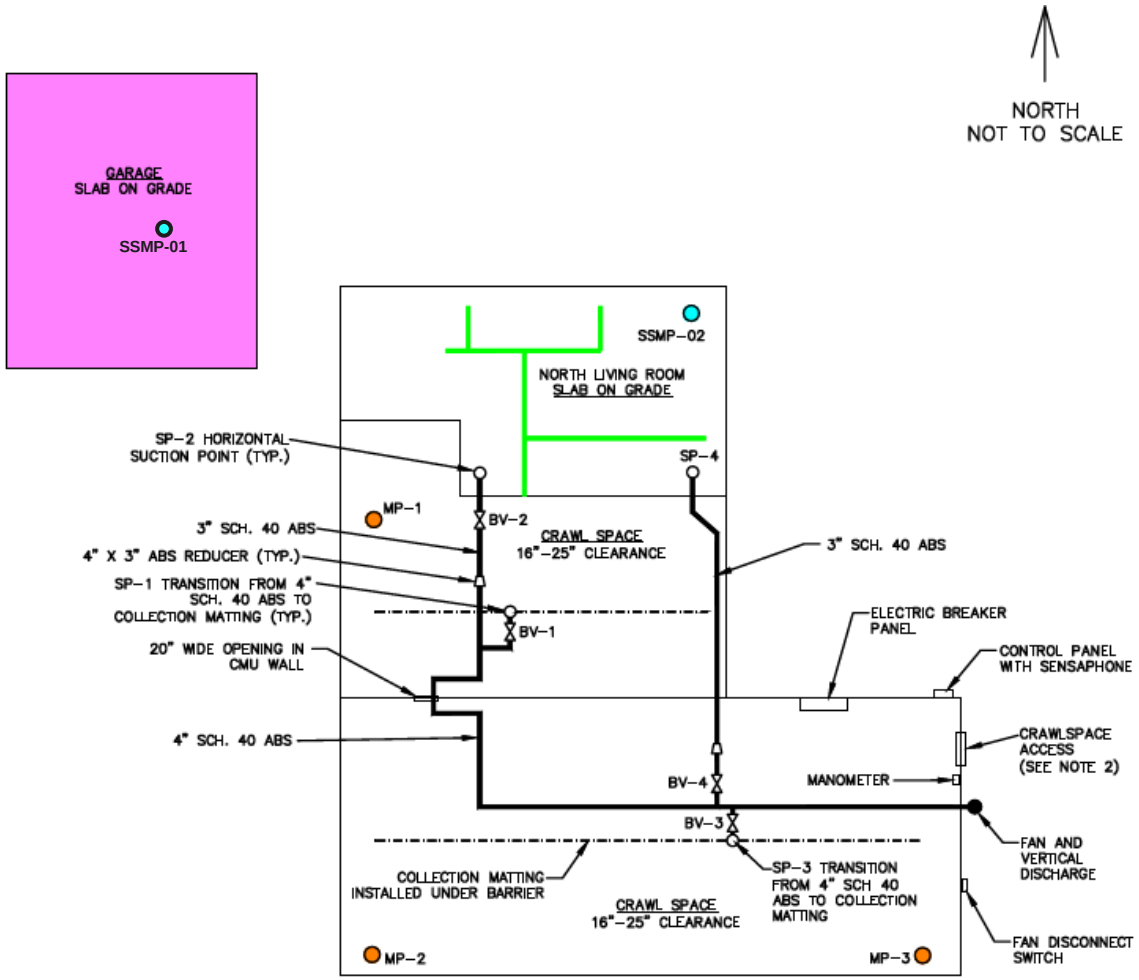


34480 Capitol



11 Sampling Events with No Exceedances of VC Criteria

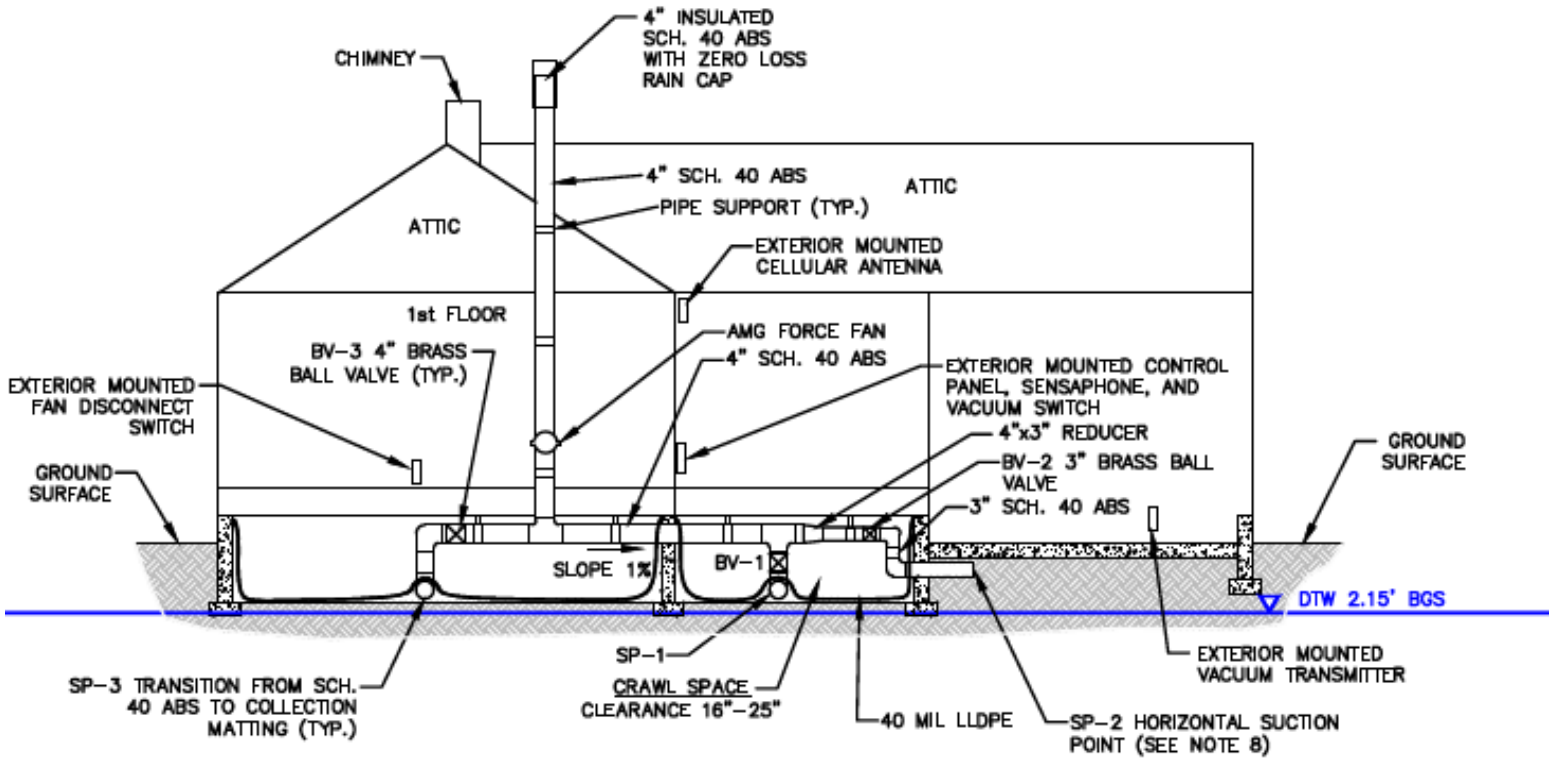
34480 Capitol



Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride ($\mu g/m^3$)
Sub-Slab Vapor (SSMP)	10/30/2018	SSMP-01	Pre Mitigation	< 3.0
	10/30/2018	SSMP-02		< 3.1
	3/5/2019	SSMP-02		< 3.1
		DUP-01		< 3.1
	3/5/2019	SSMP-01		< 3.2
	8/14/2019	SSMP-01		< 3.4
	8/14/2019	SSMP-02	Post Mitigation	< 3.4
	1/9/2020	SSMP-01	OMM	< 2.9
	1/9/2020	SSMP-02		< 3.2
Crawl Space Indoor Air (IACS)	10/30/2018	IACS-01	Pre Mitigation	< 0.47
Main Floor Indoor Air (IAF)	10/30/2018	IAF-01	Pre Mitigation	< 0.46
	10/30/2018	IAF-02		< 0.45
	3/5/2019	IAF-01		< 0.39
	3/5/2019	IAF-02		< 0.43
	8/14/2019	IAF-01	Post Mitigation	< 0.43
	8/14/2019	IAF-02		< 0.46
	1/9/2020	IAF-01	OMM	< 0.49
	1/9/2020	IAF-02		< 0.51
Garage Indoor Air (IAG)	10/30/2018	IAG-03	Pre Mitigation	< 0.40
	3/5/2019	IAG-03		< 0.41
		DUP-01		< 0.37
	8/14/2019	IAG-03		< 1.1
	1/9/2020	IAG-03	OMM	< 0.42

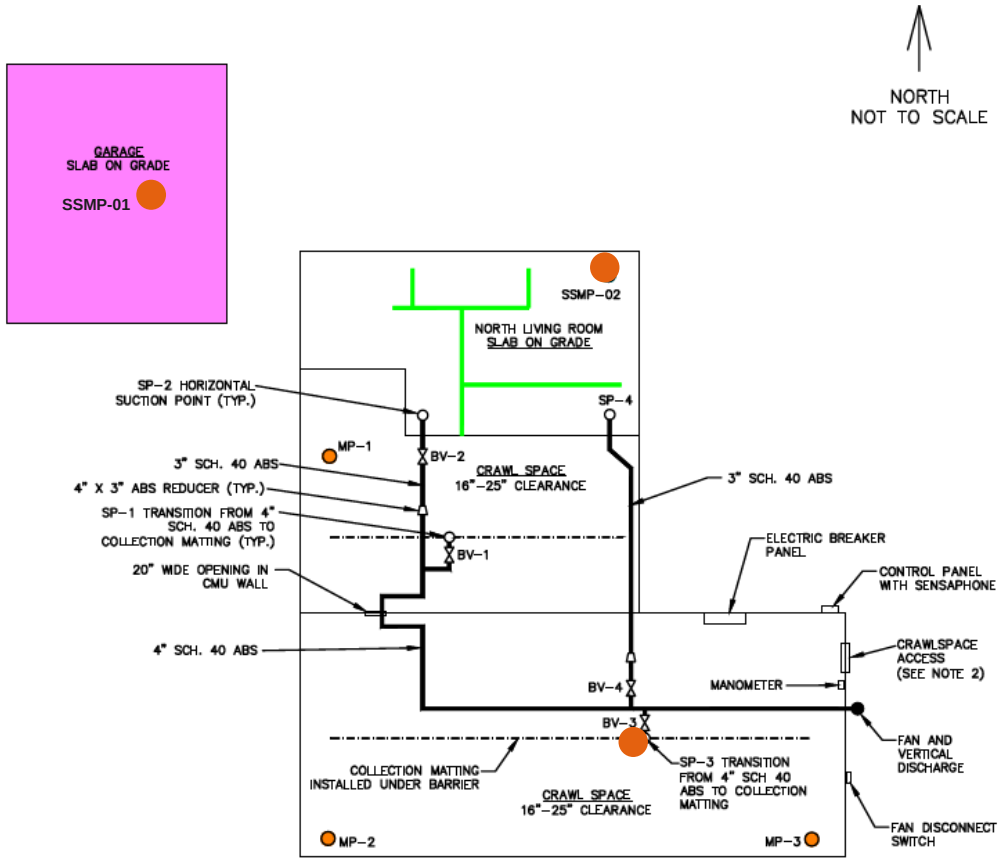
34480 Capitol

NORTH
NOT TO SCALE



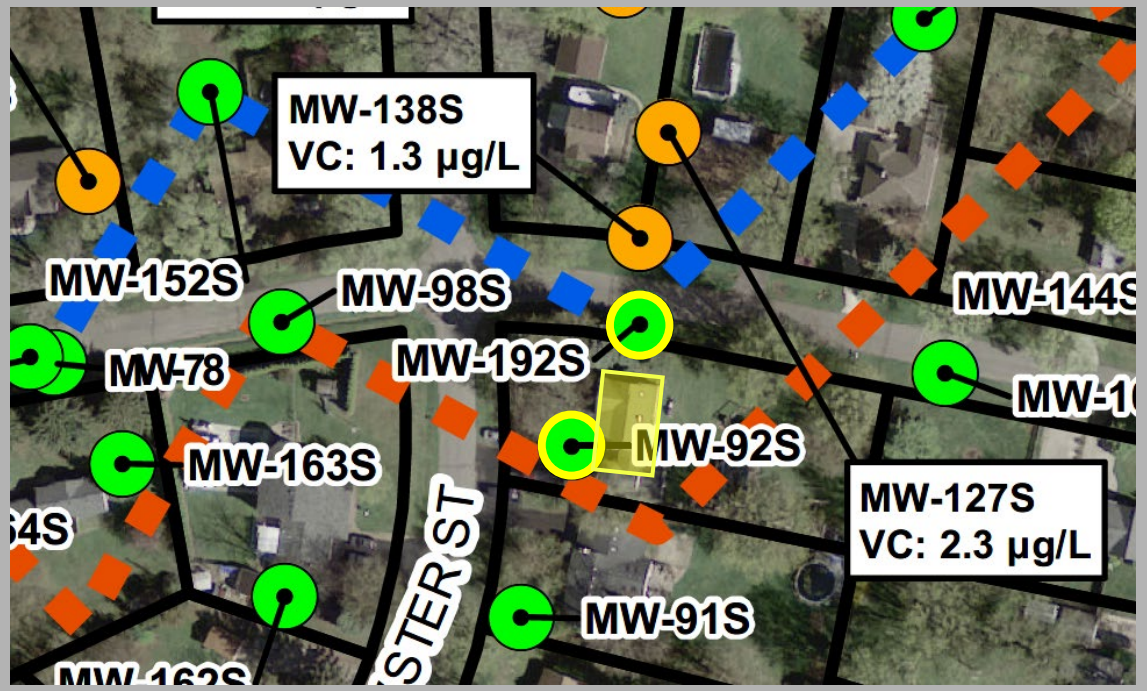
Summary of Recommendations

- Discontinue O&M of Garage Retro Coat
- Turn off existing SMD/SSD in crawlspace and slab living area
- Continue quarterly GW sampling
  - If GW concentration at MW-168SS or MW-171S is greater than criteria ➡ SS sample quarterly at SSMP-01, SSMP-02, and beneath crawlspace barrier (SP-3) until GW decreasing
  - If sample at SSMP-01, SSMP-02 or beneath crawlspace exceeds residential sub-slab VIAC ➡ Restart existing SMD/SSD system and resume O&M of garage Retro Coat
- Leave mitigation system in place.

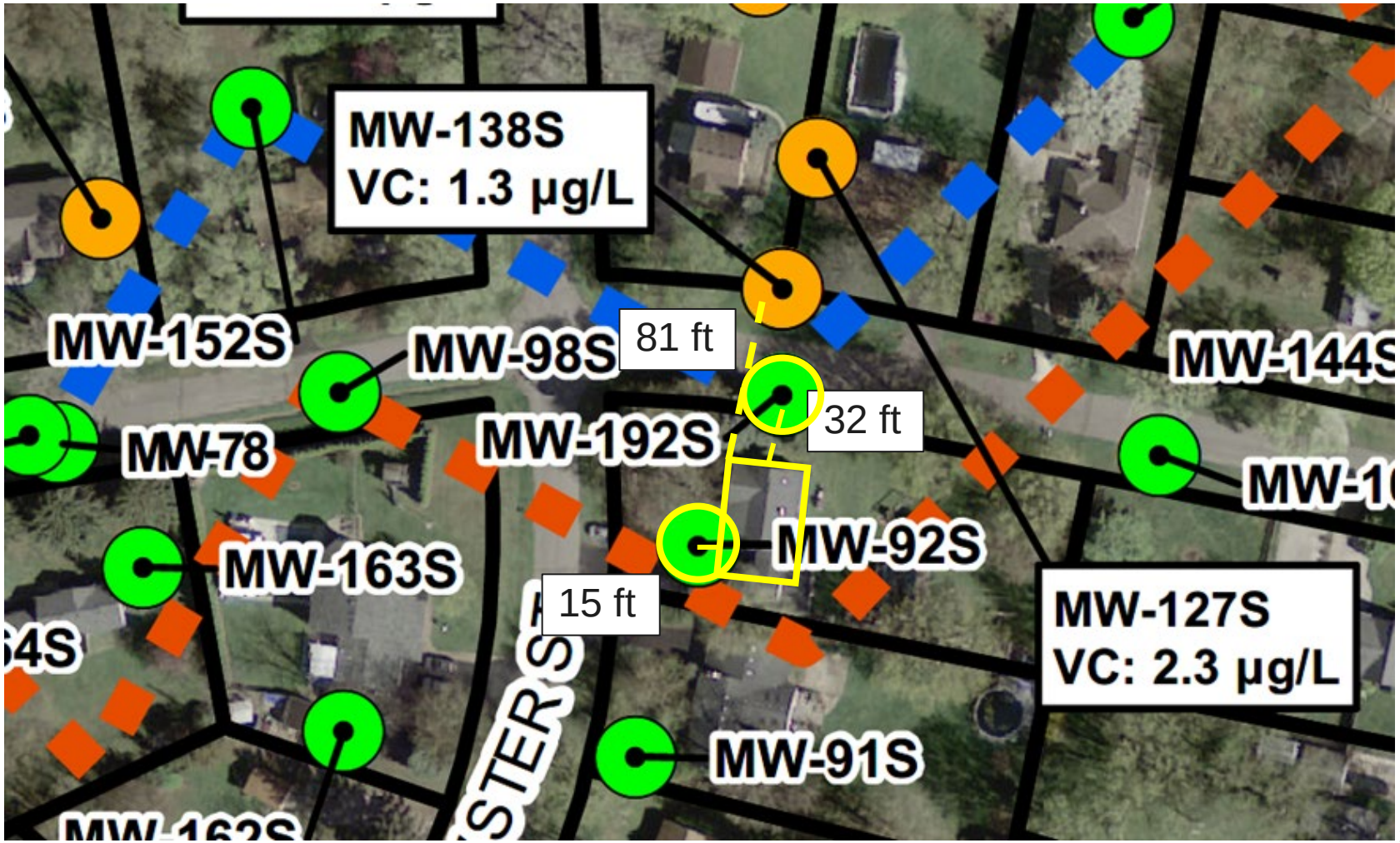


12036 Brewster

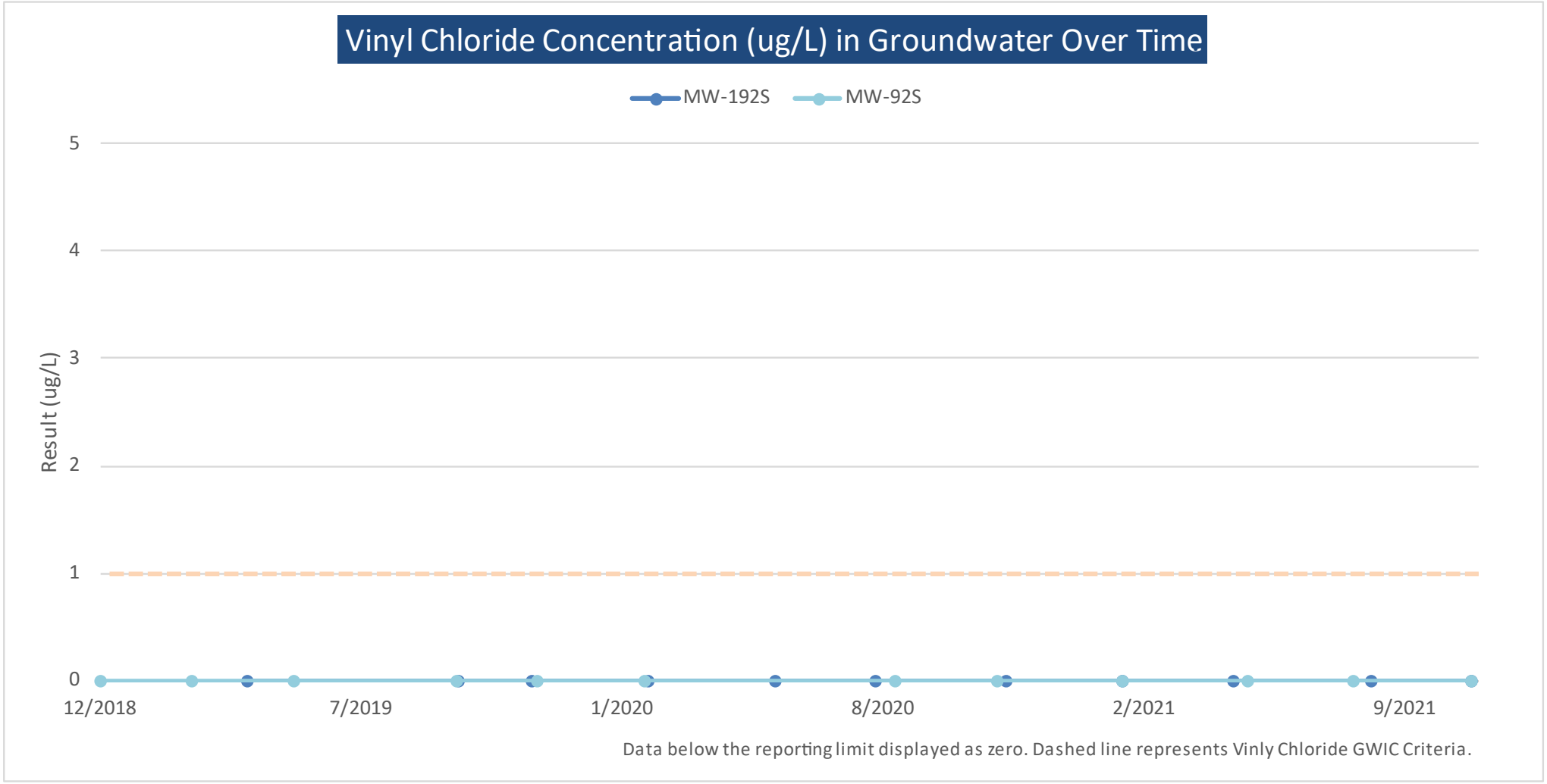
- Structure is inside the buffer
  - **MW-92S – all 12 rounds ND for VC**
  - **MW-192S – all 11 rounds ND for VC**
- All 4 Rounds SS data under attached garage – ND
  - 2 pre-mitigation and 2 post mitigation
- Recommendations
  - Basement – Discontinue O&M of Retro-Coat
  - Attached Garage and Porch – Turn off Mitigation
  - Shed – Discontinue O&M of Retro-Coat
  - Continue GW sampling (MW-92S and MW-192S)



12036 Brewster – Distance to Surrounding Wells

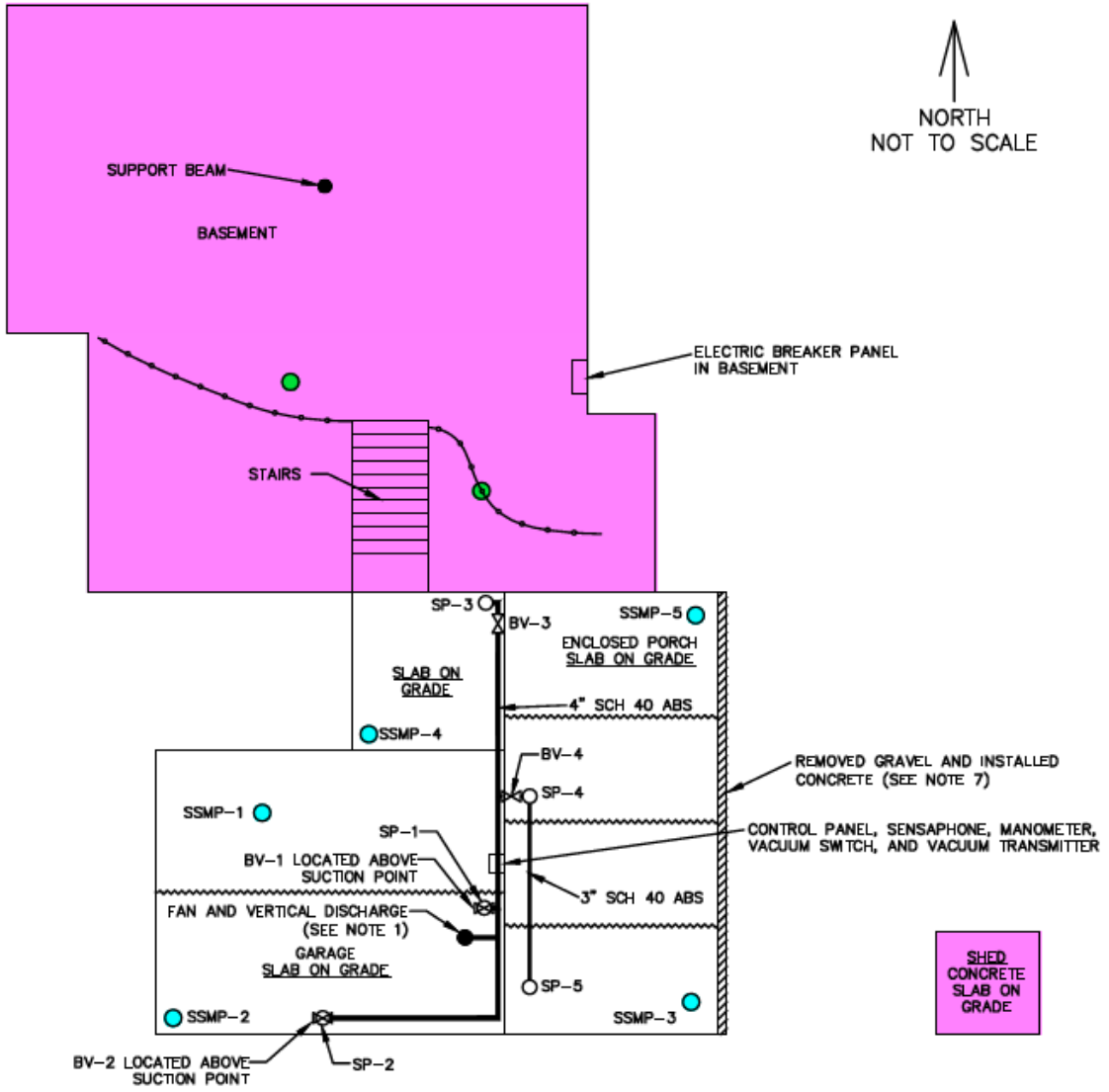


12036 Brewster



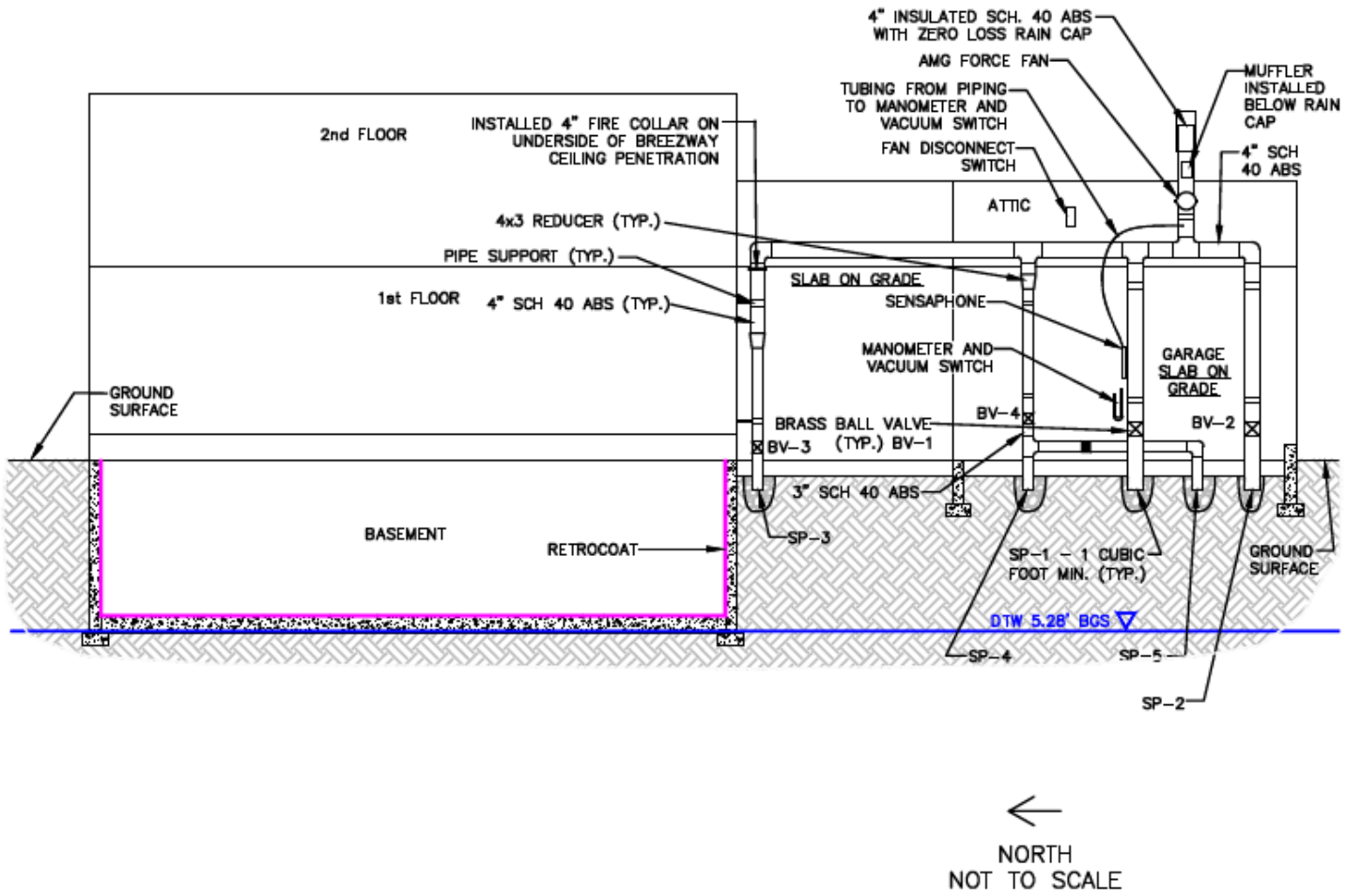
11 to 12 Sampling Events with No Detections of VC

12036 Brewster



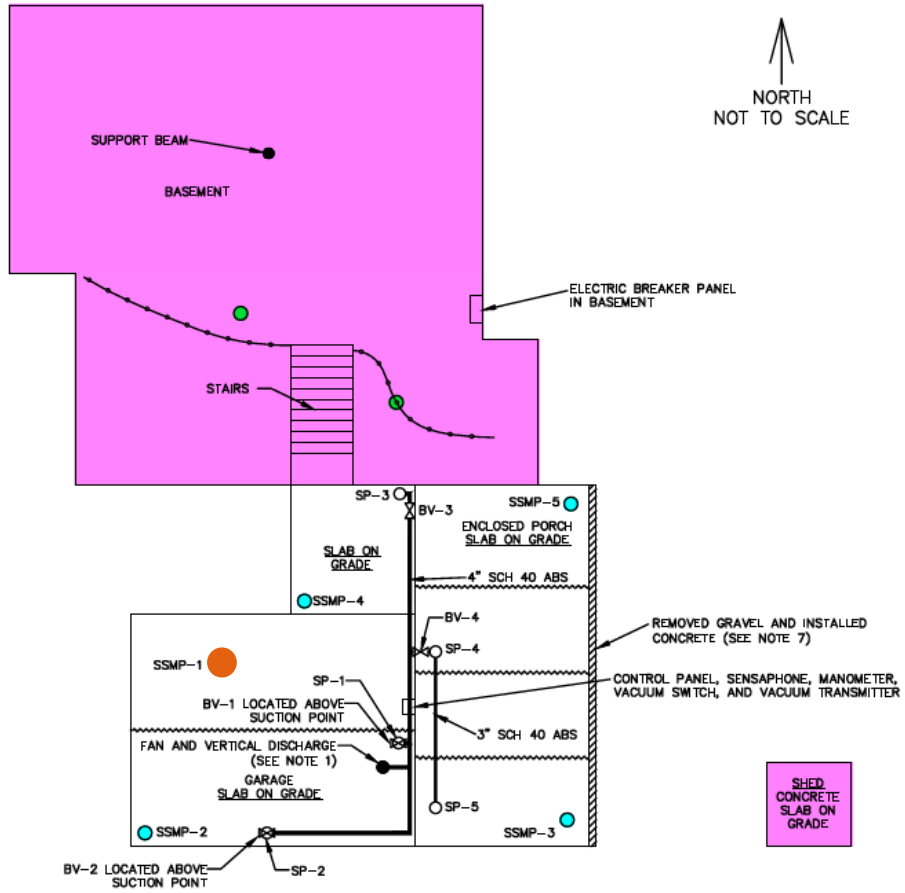
Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride (µg/m^3)
Sub-Slab Vapor (SSMP)	3/1/2019	SSMP-01	Pre Mitigation	< 3.2
	5/31/2019	SSMP-01		< 3.3
	9/5/2019	SSMP-01	Post Mitigation	< 3.1
	1/30/2020	SSMP-01	OMM	< 3.1
Basement Indoor Air (IAB)	3/1/2019	IAB-02	Pre Mitigation	0.18 J
	5/31/2019	IAB-02		0.61
		DUP-01		0.64
	9/5/2019	IAB-02	Post Mitigation	< 0.42
	1/30/2020	IAB-02	OMM	< 0.46
Main Floor Indoor Air (IAF)	10/24/2018	IAF-01	Pre Mitigation	< 0.42
	3/1/2019	IAF-01		0.20 J
	5/31/2019	IAF-01		0.48
	9/5/2019	IAF-02	Post Mitigation	< 0.43
	1/30/2020	IAF-01	OMM	< 0.47
Garage Indoor Air (IAG)	10/24/2018	IAG-03	Pre Mitigation	< 0.40
	3/1/2019	IAG-03		< 0.42
	5/31/2019	IAG-03		< 1.1
	9/5/2019	IAG-03	Post Mitigation	< 0.43
	1/30/2020	IAG-03	OMM	< 0.40

12036 Brewster



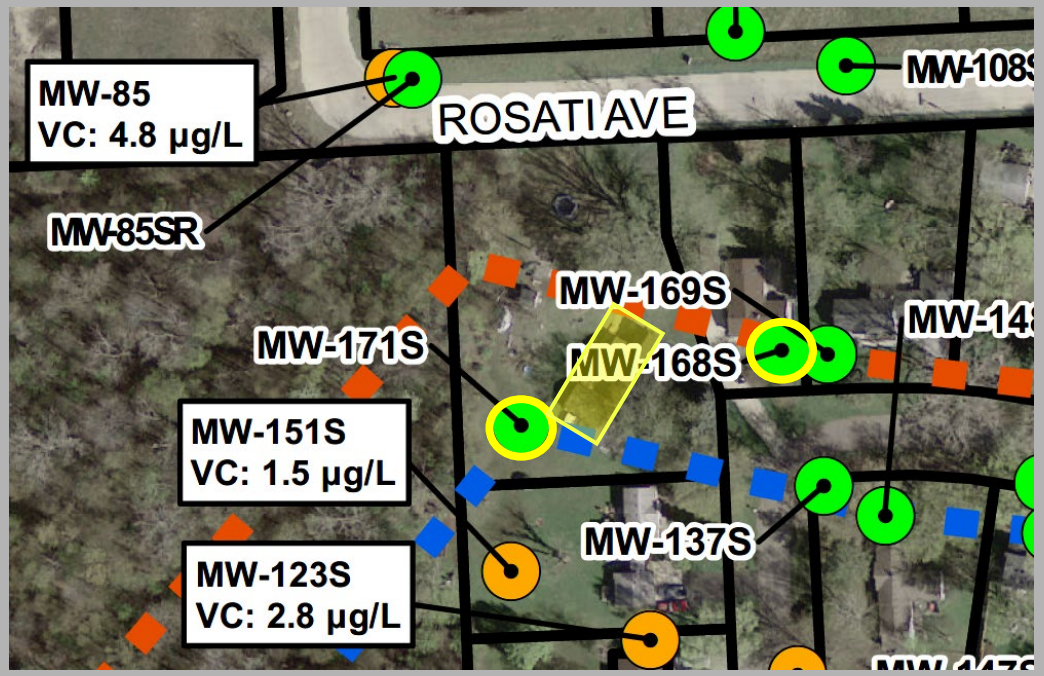
Summary of Recommendations

- Discontinue O&M of Basement Retro Coat
- Discontinue O&M of shed Retro Coat
- Turn off existing SSDS in attached garage/porch
- Continue quarterly GW sampling
  - If GW concentration at MW-92S or MW-192S is greater than criteria → SS sample quarterly at SSMP-1 and resume O&M of basement Retro Coat until GW decreasing
  - If SS sample at SSMP-1 exceeds residential sub-slab VIAC → Restart existing SSDS and resume O&M
- Leave mitigation system in place.

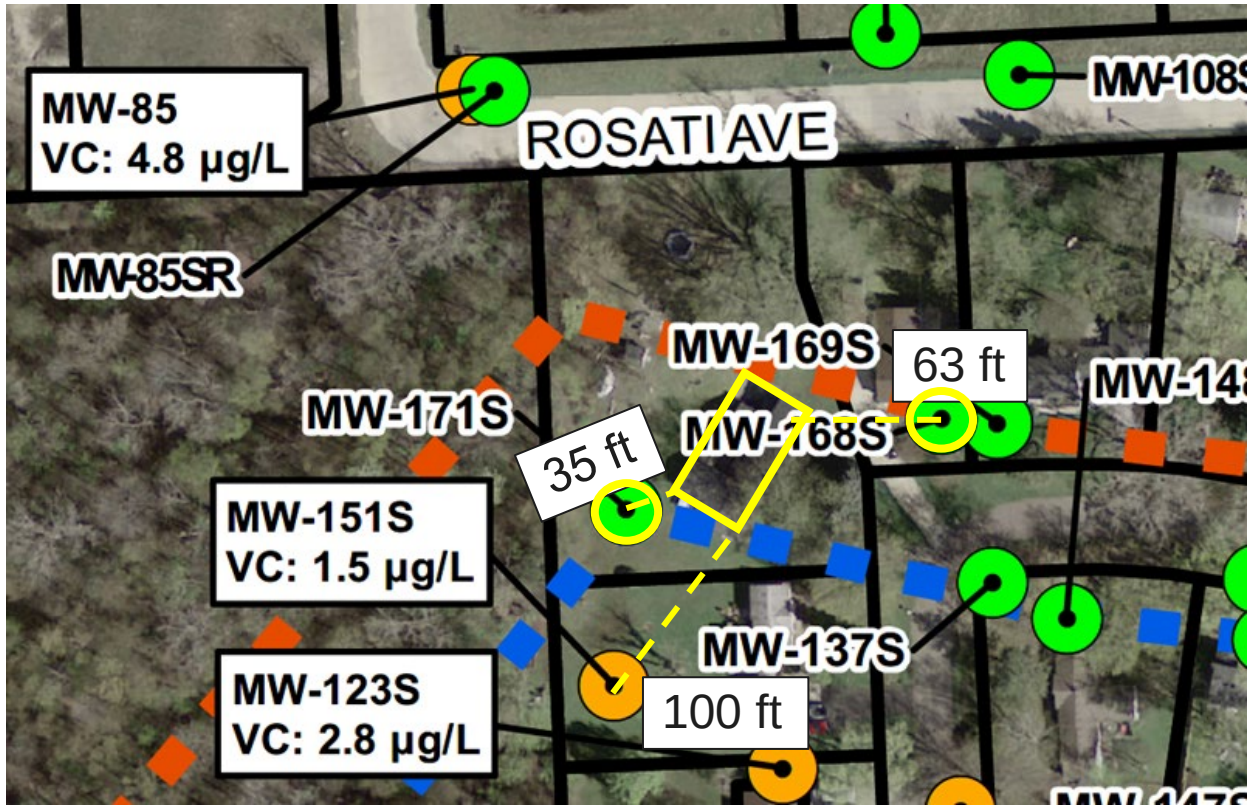


12101 Brewster

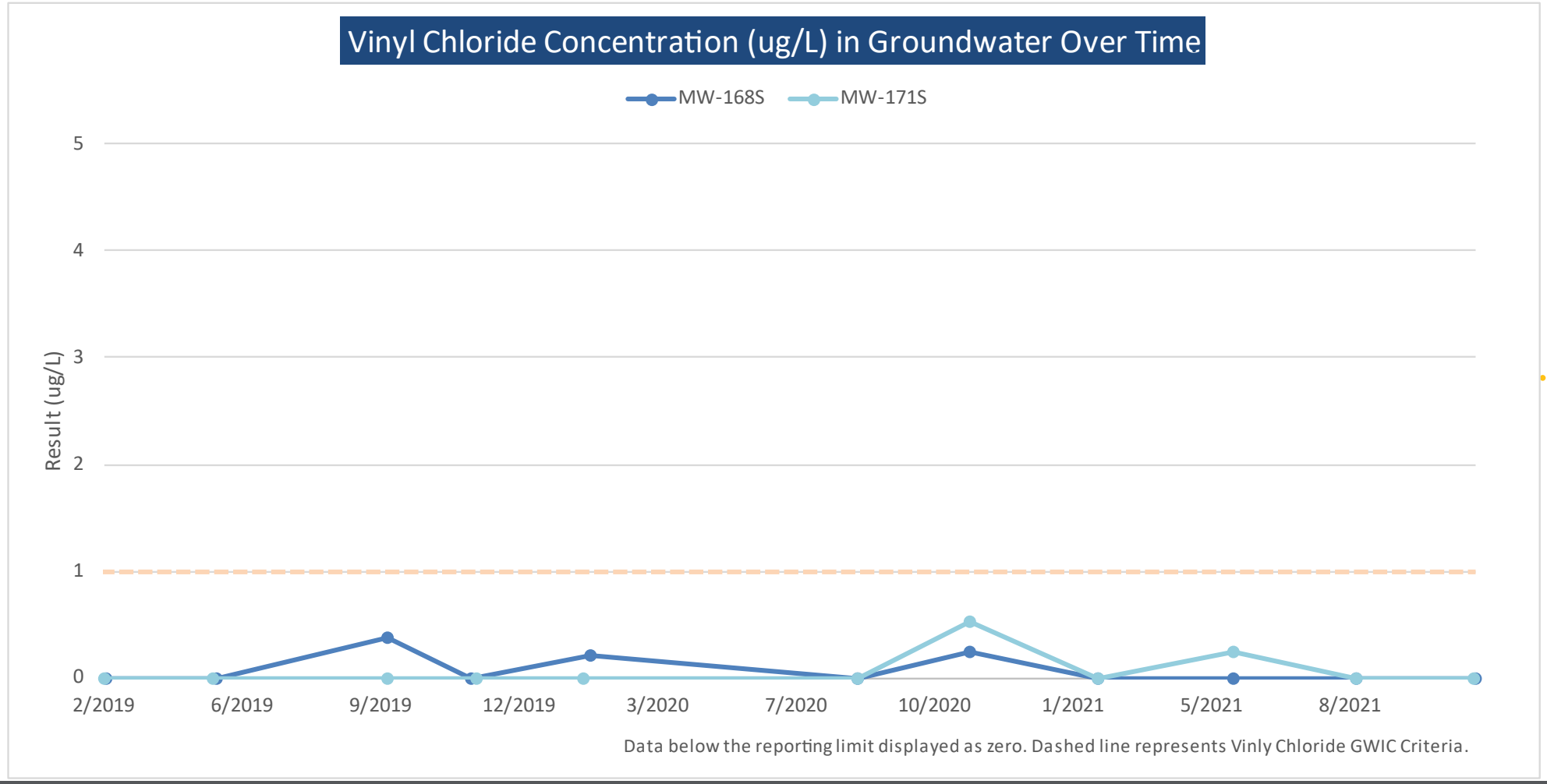
- Structure is inside the buffer
  - **MW-171S – all 11 rounds below criteria**
  - **MW-168S – all 11 rounds below criteria**
- All 3 Rounds SS data under attached garage areas– ND
  - 1 pre-mitigation and 2 post mitigation at SSMP-01 and SSMP-02
- Recommendations
  - Crawlspace and Slab Areas – Turn off SMD/SSD
  - Continue GW sampling (MW-171S and MW-168S)



12101 Brewster – Distance to Surrounding Wells

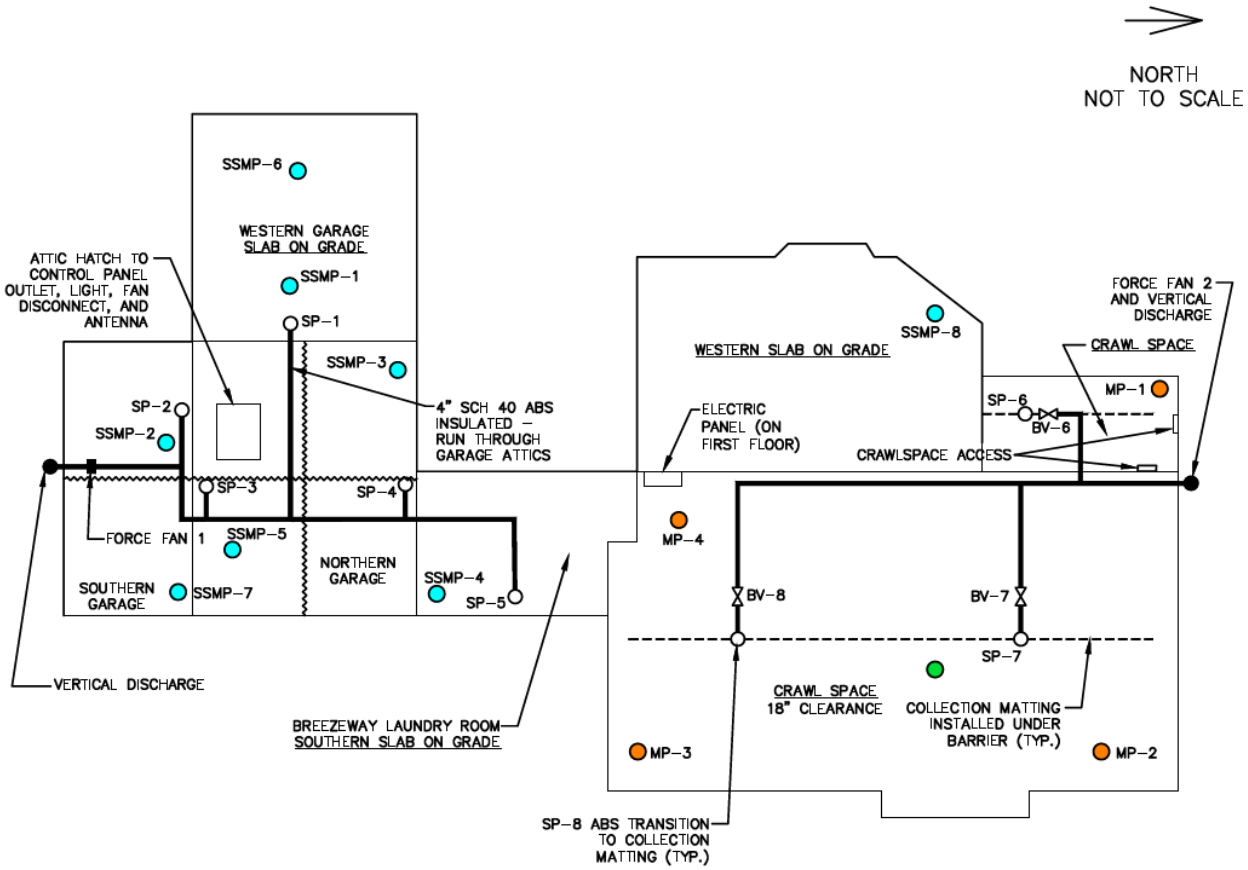


12101 Brewster



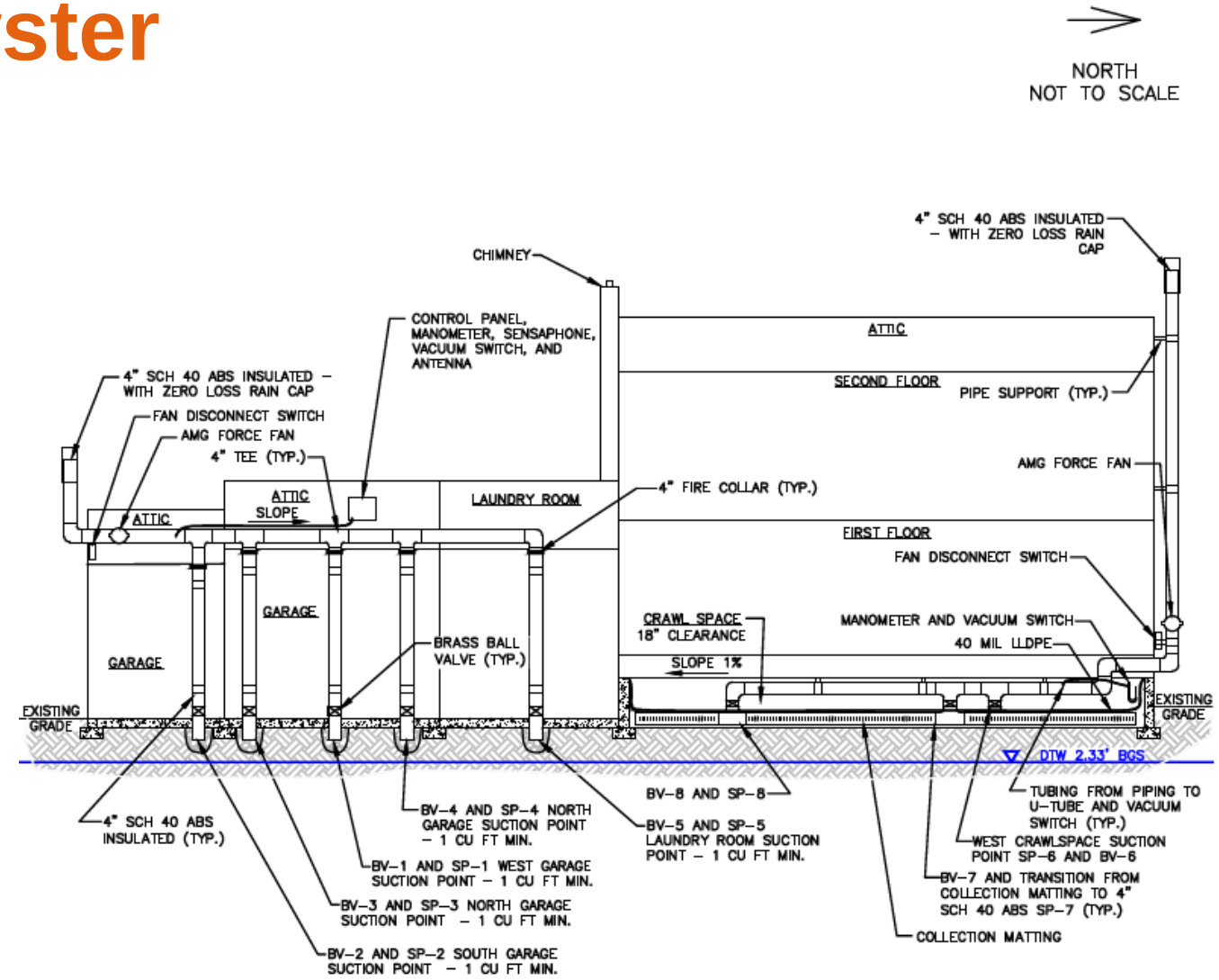
11 Sampling Events with No Exceedances of VC within 100 feet

12101 Brewster



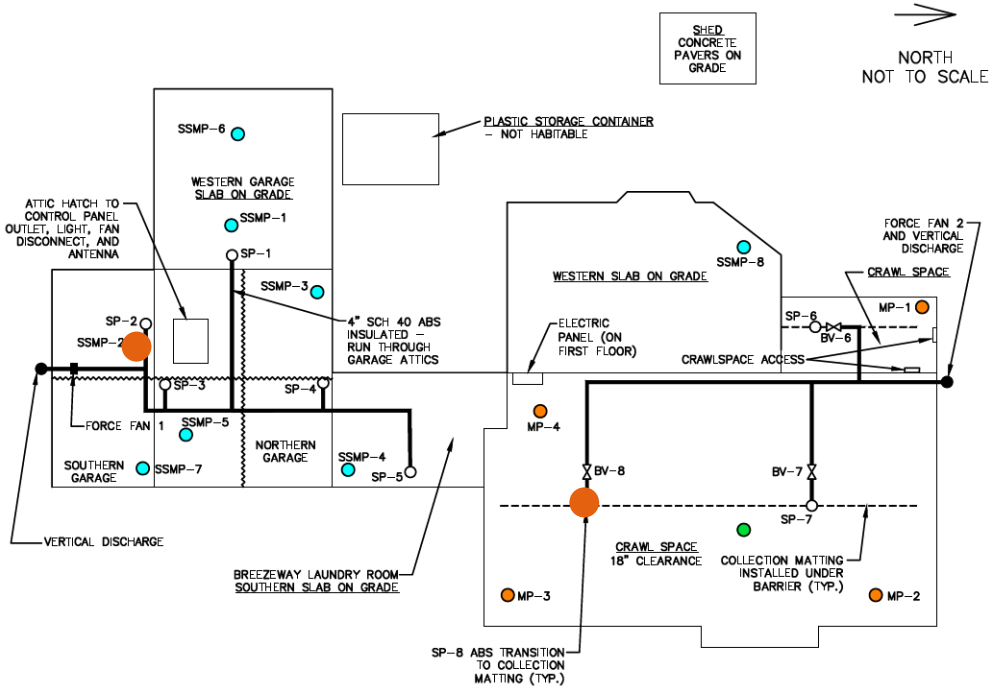
Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m3
Sub-Slab Vapor (SSMP)	3/20/2019	SSMP-01	Pre Mitigation	< 2.9
	3/20/2019	SSMP-02		< 3.0
	8/14/2019	SSMP-01	Post Mitigation	< 3.3
	8/14/2019	SSMP-02		< 3.3
	1/22/2020	SSMP-01	OMM	< 3.0
		DUP-01		< 2.8
	1/22/2020	SSMP-02		< 3.0
Main Floor Indoor Air (IAF)	3/20/2019	IAF-01	Pre Mitigation	< 0.43
	3/20/2019	IAF-03		< 0.41
	8/14/2019	IAF-01	Post Mitigation	< 0.41
	8/14/2019	IAF-03		< 0.46
	1/22/2020	IAF-01	OMM	< 0.46
	1/22/2020	IAF-03		< 0.40
Garage Indoor Air (IAG)	3/20/2019	IAG-02	Pre Mitigation	0.19 J
		DUP-02		0.18 J
	8/14/2019	IAG-02	Post Mitigation	< 0.43
	1/22/2020	IAG-02	OMM	< 0.40

12101 Brewster



Summary of Recommendations

- Turn off existing SMD/SSD in crawlspace and slab areas
- Continue quarterly GW sampling
  - If GW concentration MW-168S or MW-171S is greater than criteria → SS sample quarterly at SSMP-02, and beneath crawlspace barrier (SP-8) until GW decreasing
  - If sample at SSMP-02, or beneath crawlspace barrier exceeds residential sub-slab VIAC → Restart existing SMD/SSD system
- Leave mitigation system in place.

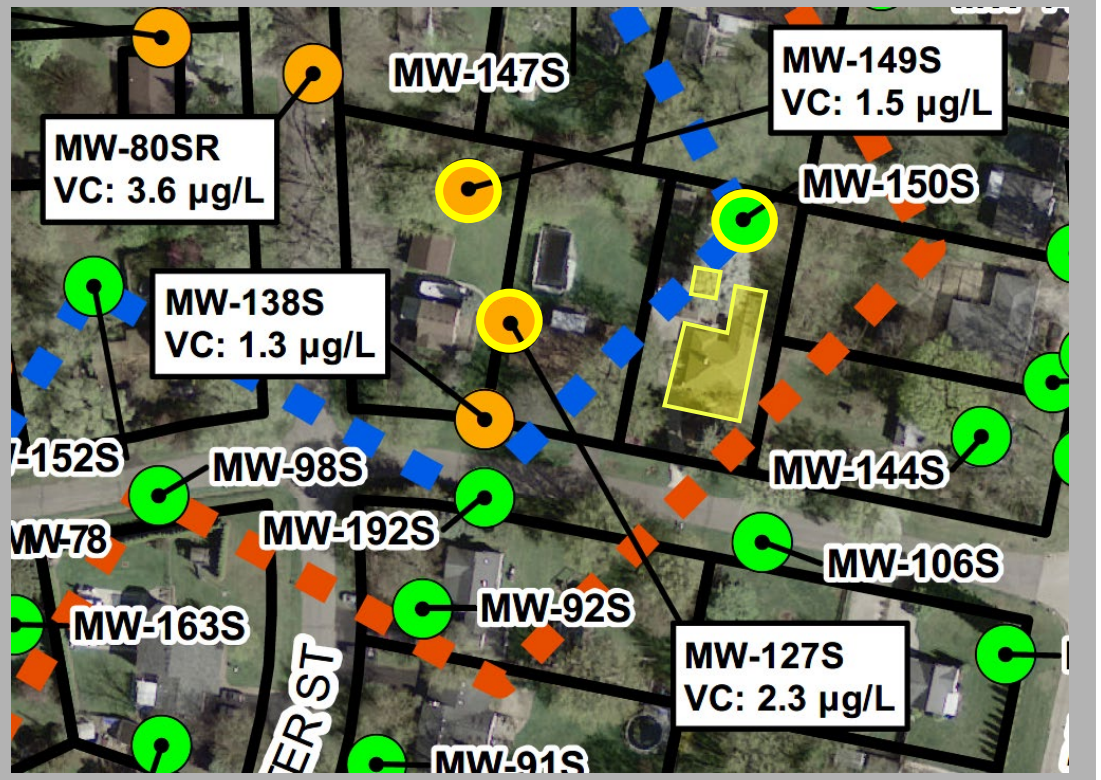


1 Mitigated Property with VC in Upgradient GW Greater than 1 ppb

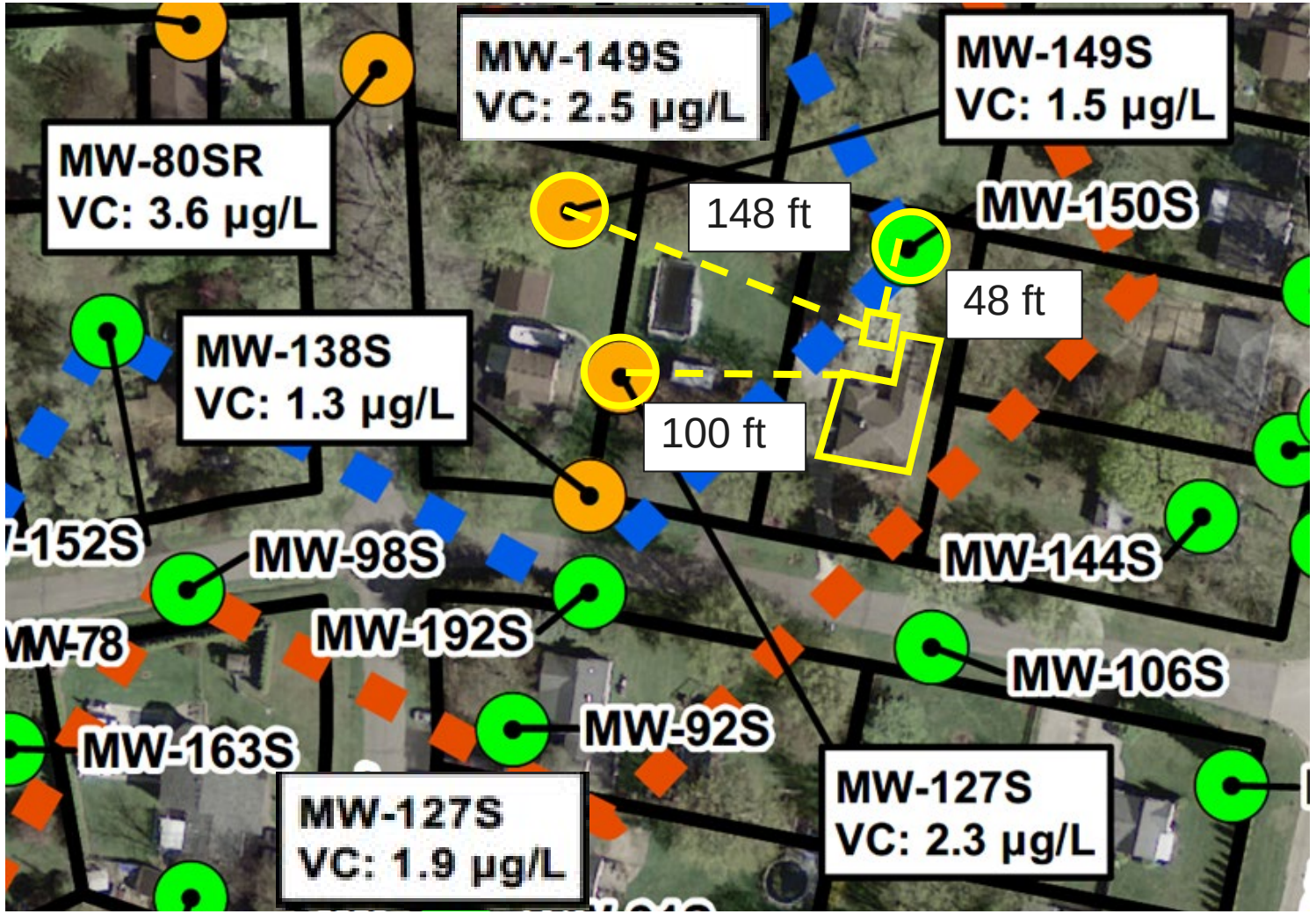
34380 Beacon

34380 Beacon

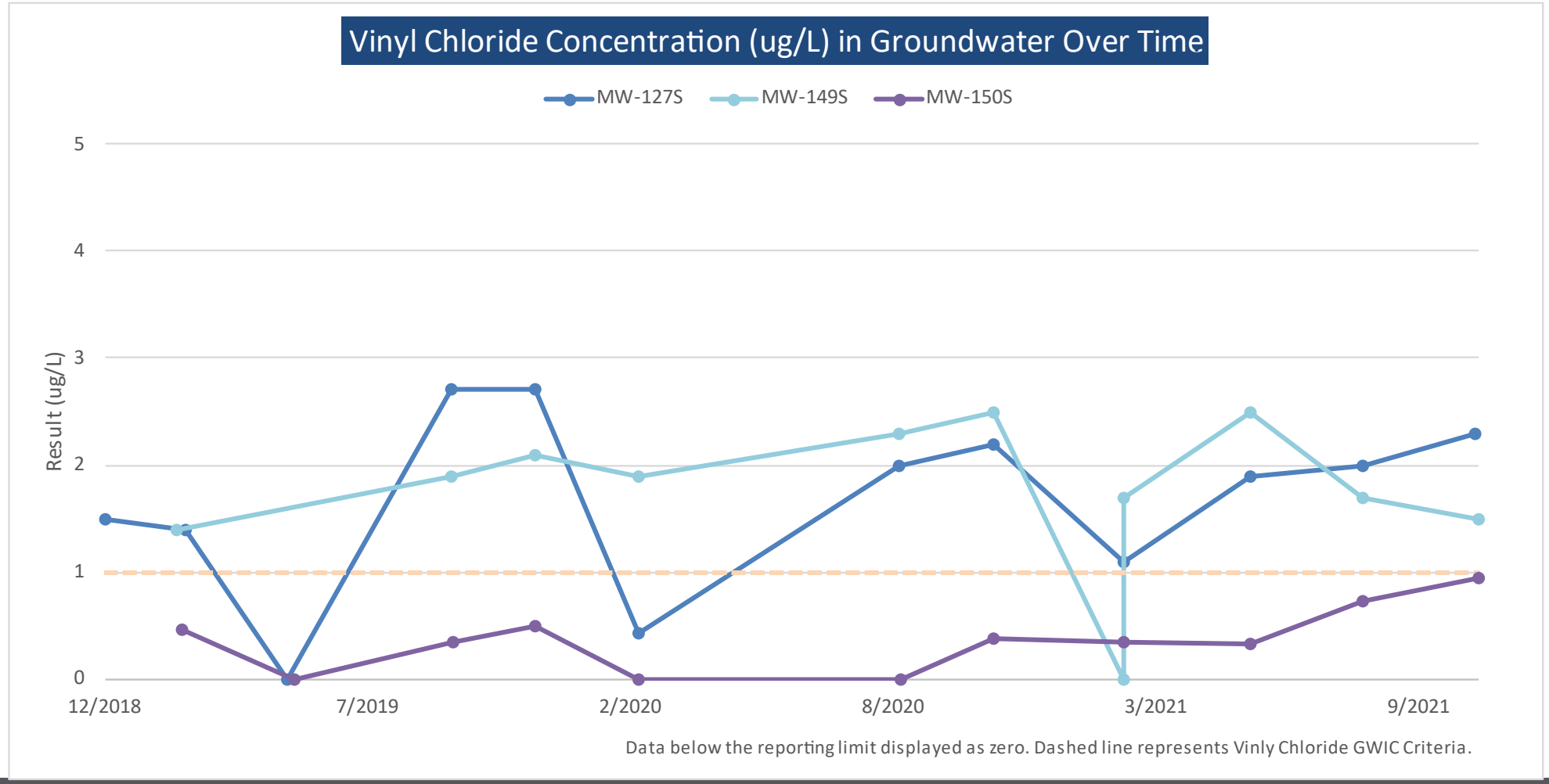
- Structure is inside buffer
  - MW-150S – all 11 rounds below criteria
  - MW-149S – historic peak 2.5 µg/L
  - MW-127S – historic peak 2.7 µg/L
- **All 3 Rounds SS data – ND**
  - 3 in the detached garage
  - 1 post-mitigation in slab living area
- Recommendations
  - Detached Garage and Shed – Discontinue O&M of Retro Coat
  - Crawlspace and Slab Living Area – Turn off SMD/SSD
  - Complete 2 rounds of quarterly SS sampling from SSMP-02 in the slab living area and beneath the crawlspace barrier
  - Continue GW sampling (MW-127S, MW-149S, and MW-150S)



34380 Beacon – Distance to Surrounding Wells

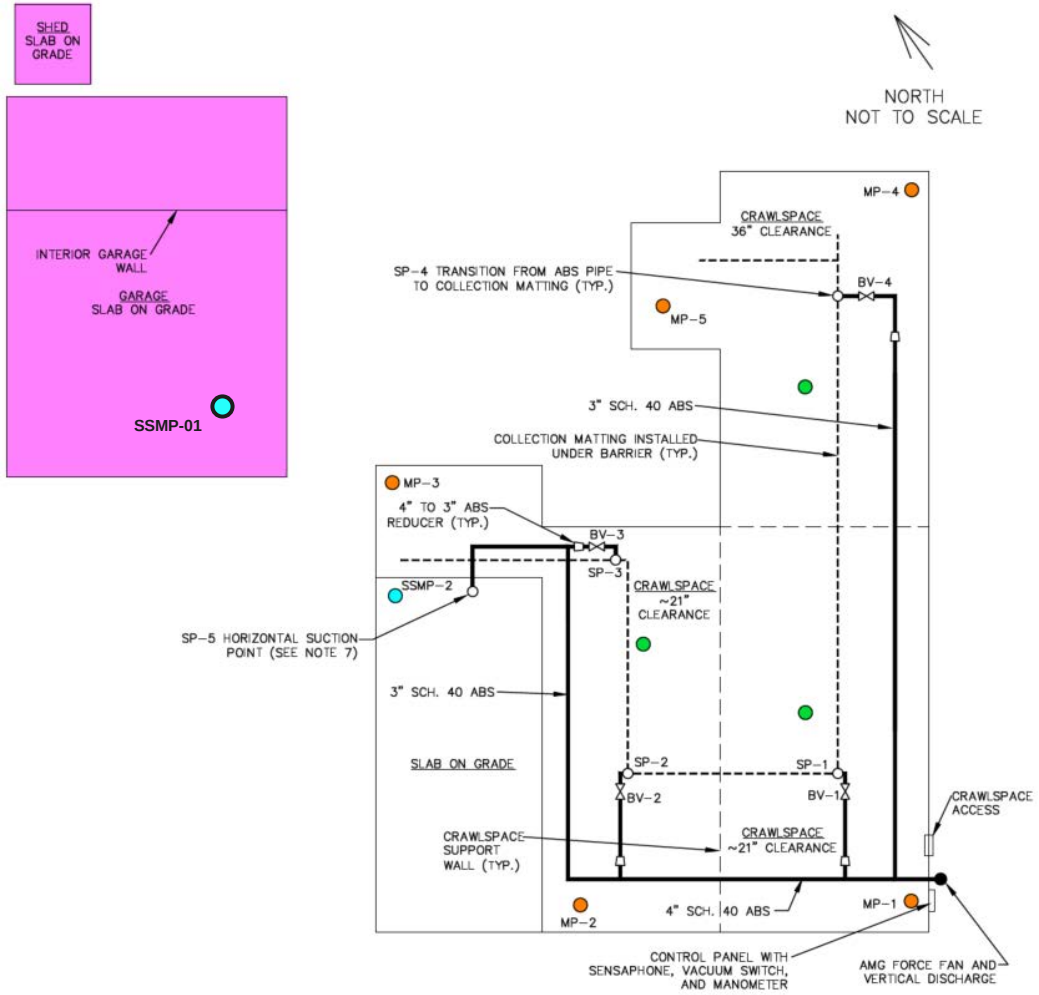


34380 Beacon



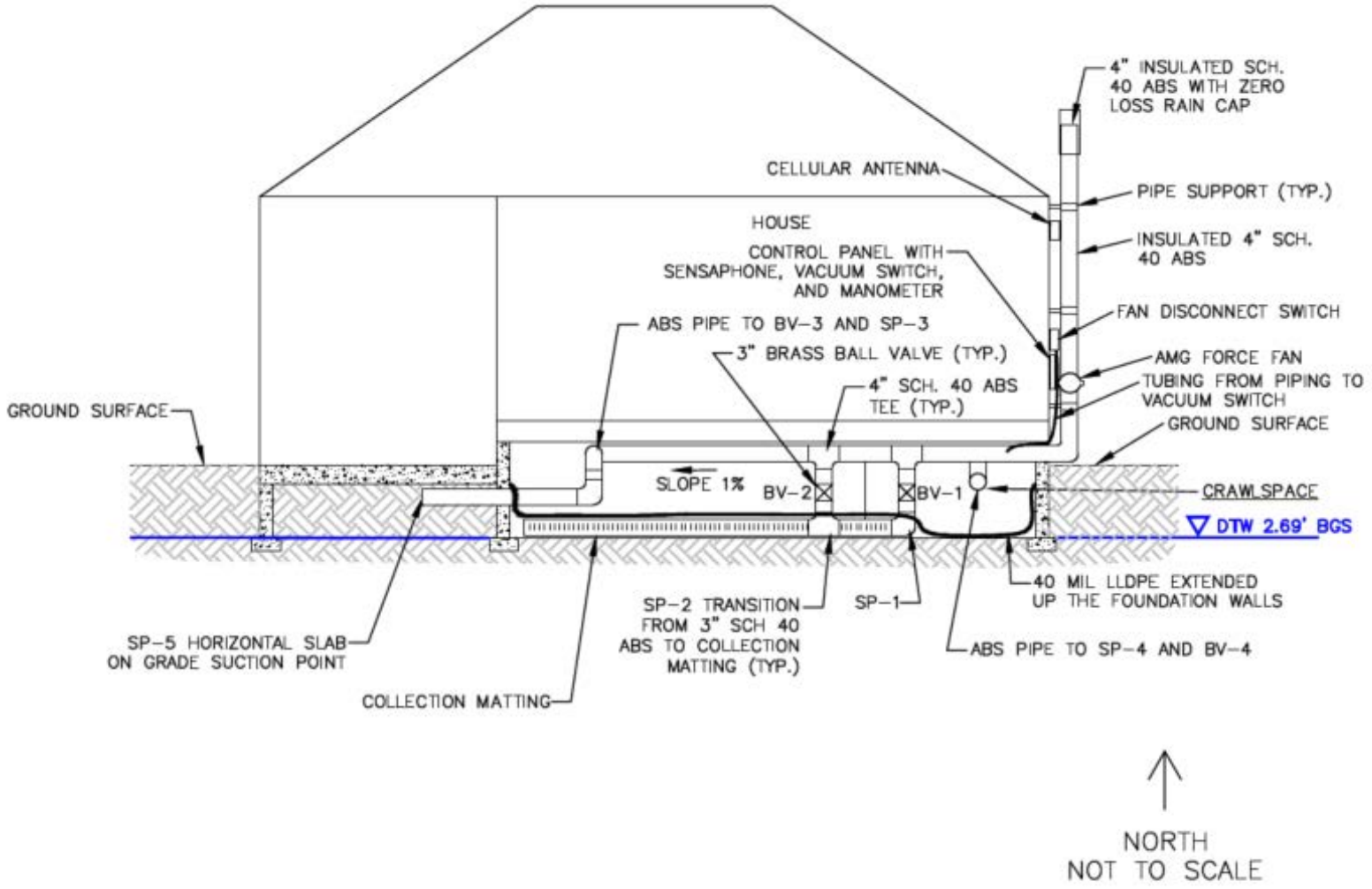
VC in GW Not Present in Soil Gas at GW Concentrations up to 2.7 µg/L

34380 Beacon



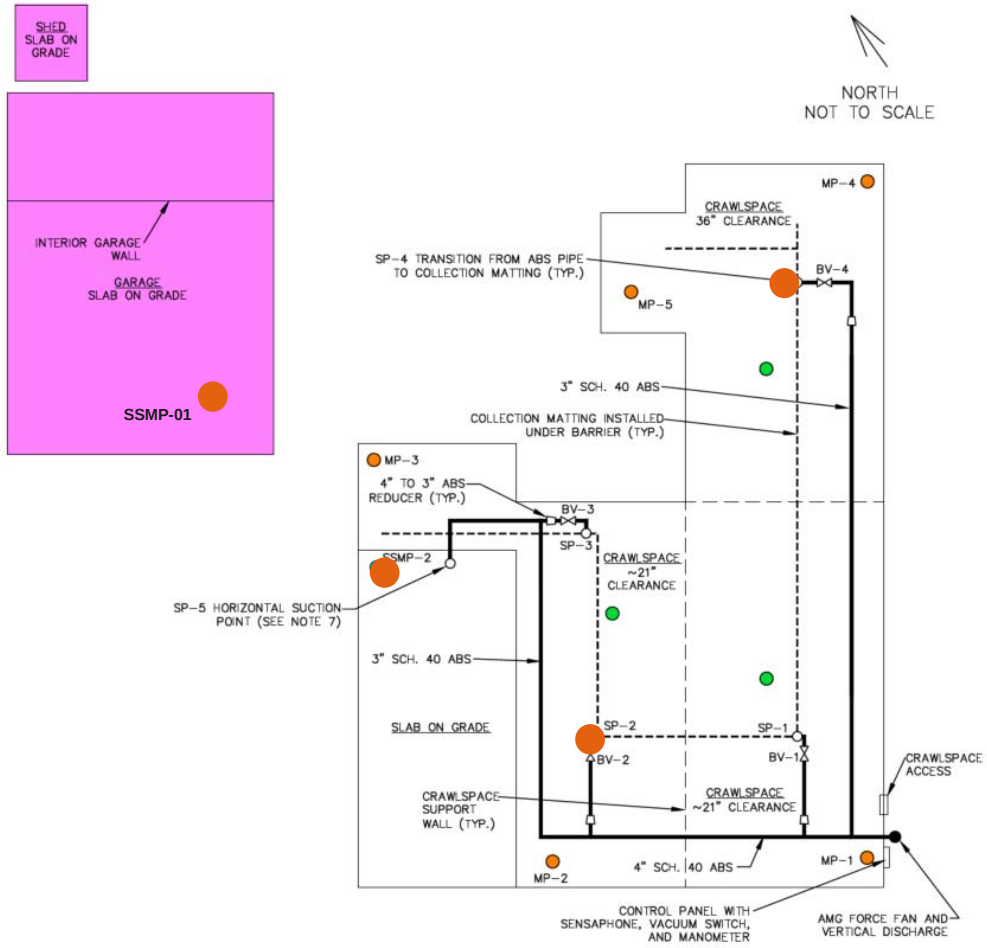
Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m³
Crawl Space Indoor Air (IACS)	10/25/2018	IACS-02	Pre Mitigation	< 0.43
	10/25/2018	IACS-04		< 0.43
Main Floor Indoor Air (IAF)	10/25/2018	IAF-03	Pre Mitigation	< 0.45
	2/22/2019	IAF-03		< 0.44
	5/22/2019	IAF-03	Post Mitigation	< 0.45
		DUP-02		< 0.43
	11/11/2020	IAF-03	OMM	< 0.43
Garage Indoor Air (IAG)	10/25/2018	IAG-01	Pre Mitigation	< 0.42
	5/22/2019	IAG-01		< 0.41
	11/11/2020	IAG-01	Post Mitigation	< 0.42
Sub-Slab Vapor (SSMP)	2/22/2019	SSMP-01	Pre Mitigation	< 2.9
	5/22/2019	SSMP-01		< 3.1
	11/11/2020	SSMP-01	Post Mitigation	< 3.3
	11/11/2020	SSMP-02		< 3.3

34380 Beacon



Summary of Recommendations

- Discontinue O&M of detached garage and shed Retro Coat
- Turn off existing SMD/SSD in crawlspace and slab living area
  - Sample SSMP-02 and beneath crawlspace barrier at SP-2 and SP-4, twice quarterly
  - If sample at SSMP-02 or beneath crawlspace barrier exceeds residential sub-slab VIAC → Restart existing SMD/SSD
- Continue quarterly GW sampling
  - If GW concentration MW-150S is greater than criteria or MW-149S is greater than historic peak of 2.5 µg/L or MW-127S is greater than historic peak of 2.7 µg/L → SS sample quarterly at SSMP-01, SSMP-02, and beneath the crawlspace barrier at SP-2 and SP-4 until GW decreasing
  - If SS sample at SSMP-01, SSMP-02, or beneath barrier exceeds residential sub-slab VIAC → Restart existing SMD/SSD
- Leave mitigation system in place.



4 Mitigated Properties with VC in GW less than or near 1 ppb – West of Plume

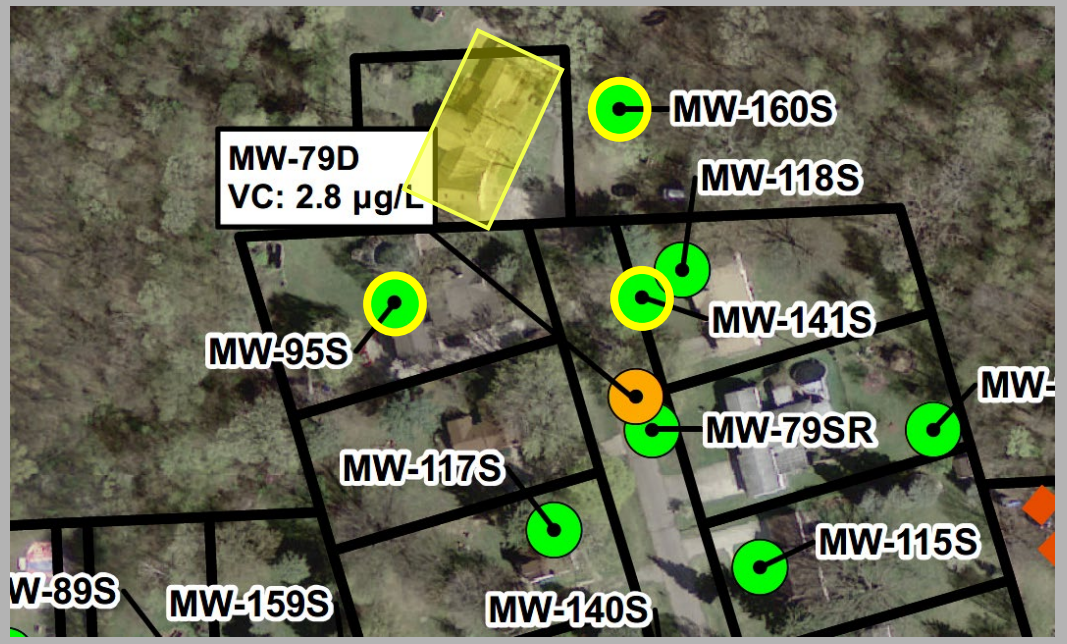
12141 Boston Post
12131 Boston Post
12089 Boston Post
34990 Beacon

12141 Boston Post

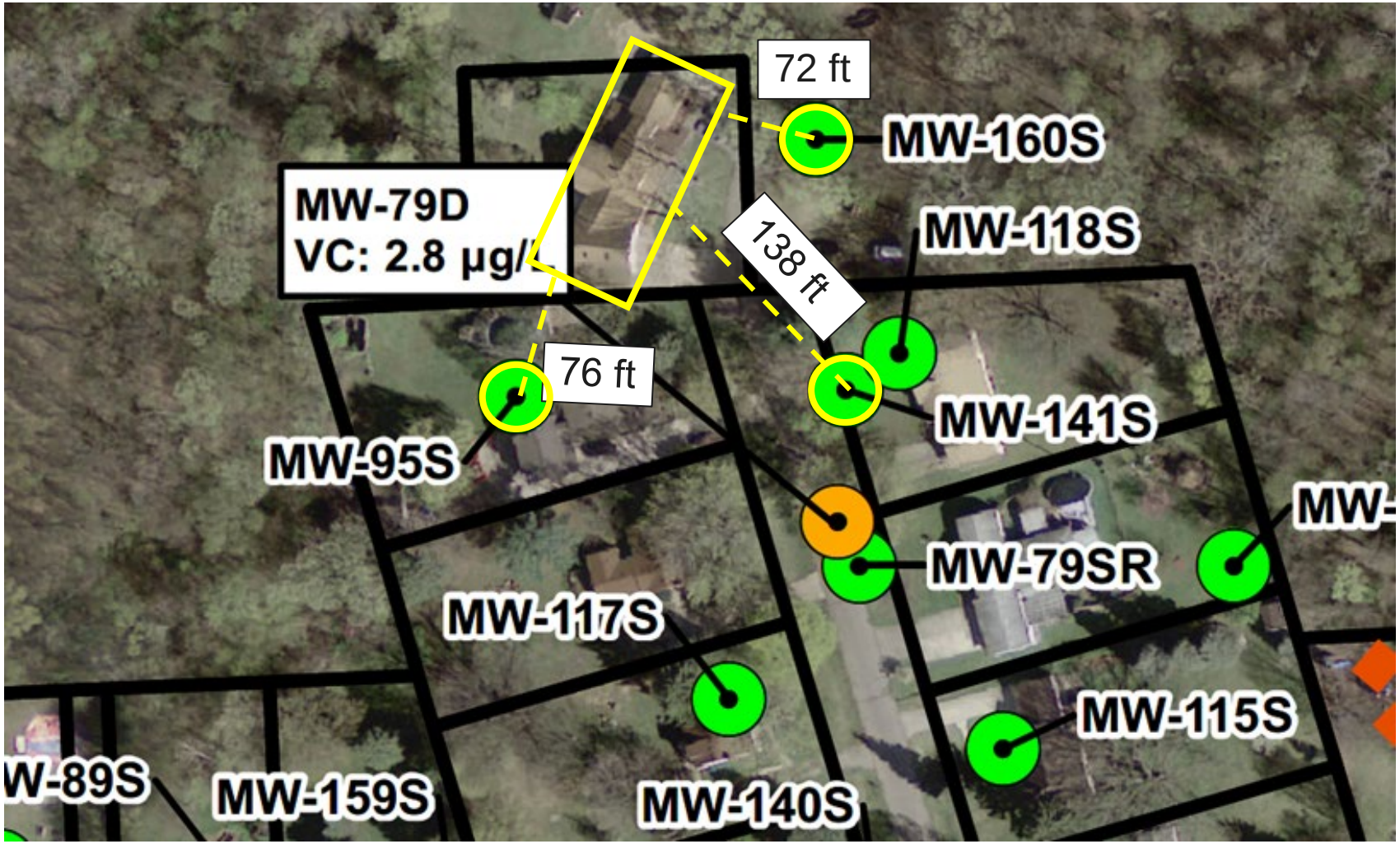
- **Structure is outside buffer**
  - **MW-141S – all 12 rounds ND**
  - **MW-160S – all 12 rounds ND**; unable to sample well in 2Q2021
  - **MW-95S – historic peak 1.1 µg/L**
- All 7 Rounds SS data – ND
  - 2 pre-mitigation and 5 post mitigation at SSMP-01
  - 1 post mitigation at SSMP-02

Recommendations

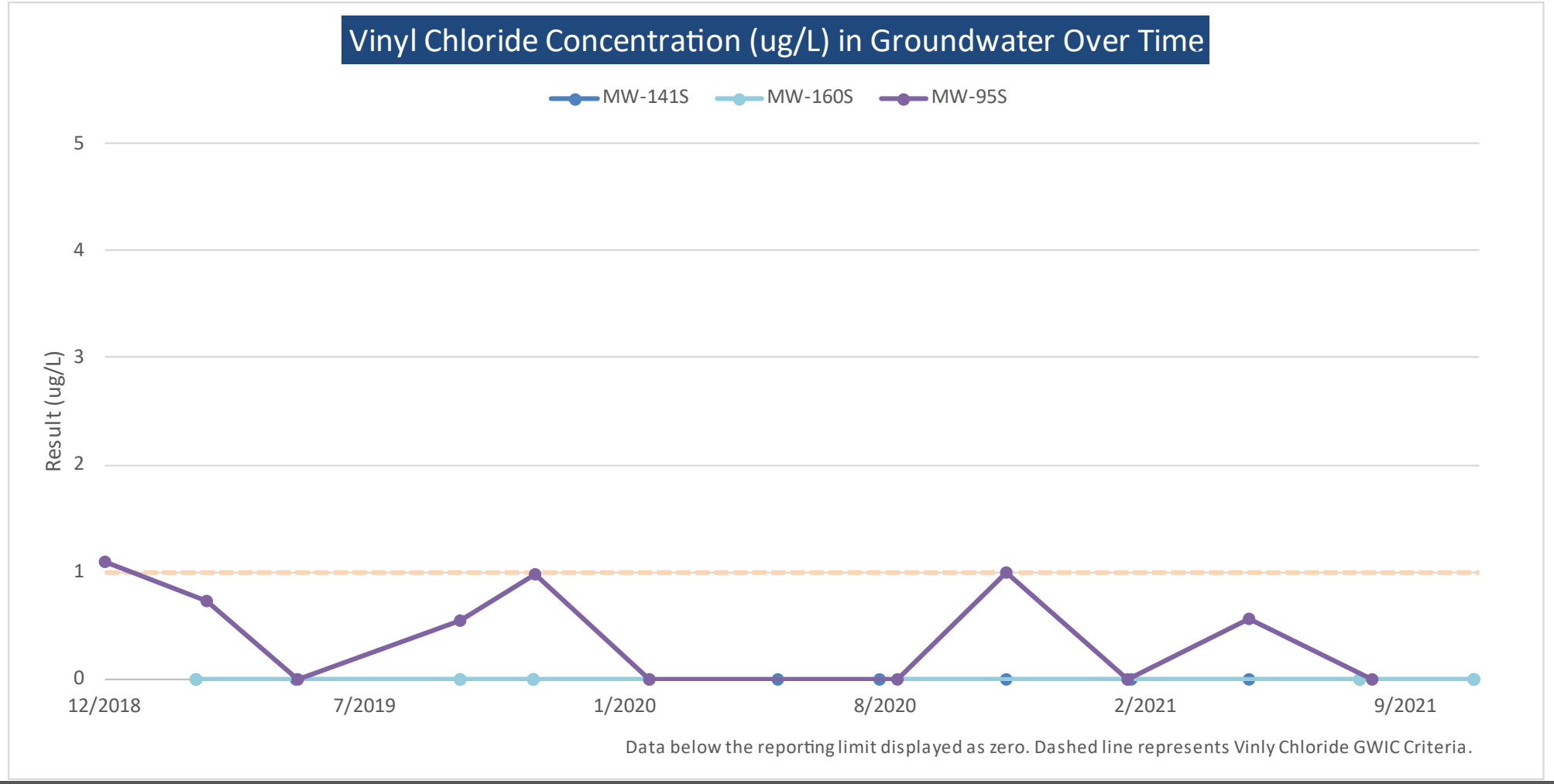
- Shed – Discontinue O&M of Retro-Coat
- Crawlspace and Slab Areas – Turn off SMD/SSD
- Continue GW sampling (MW-141S, MW-160S, and MW-95S)



12141 Boston Post – Distance to Surrounding Wells

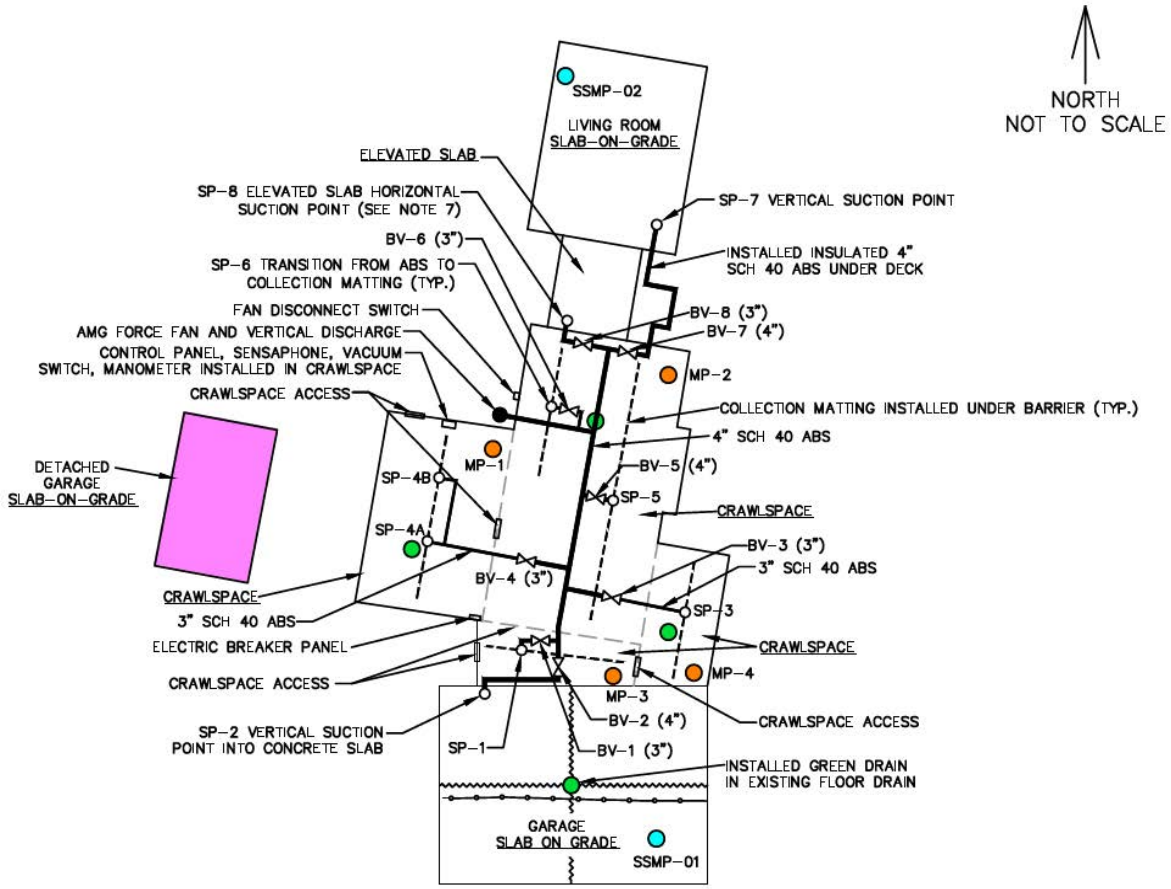


12141 Boston Post



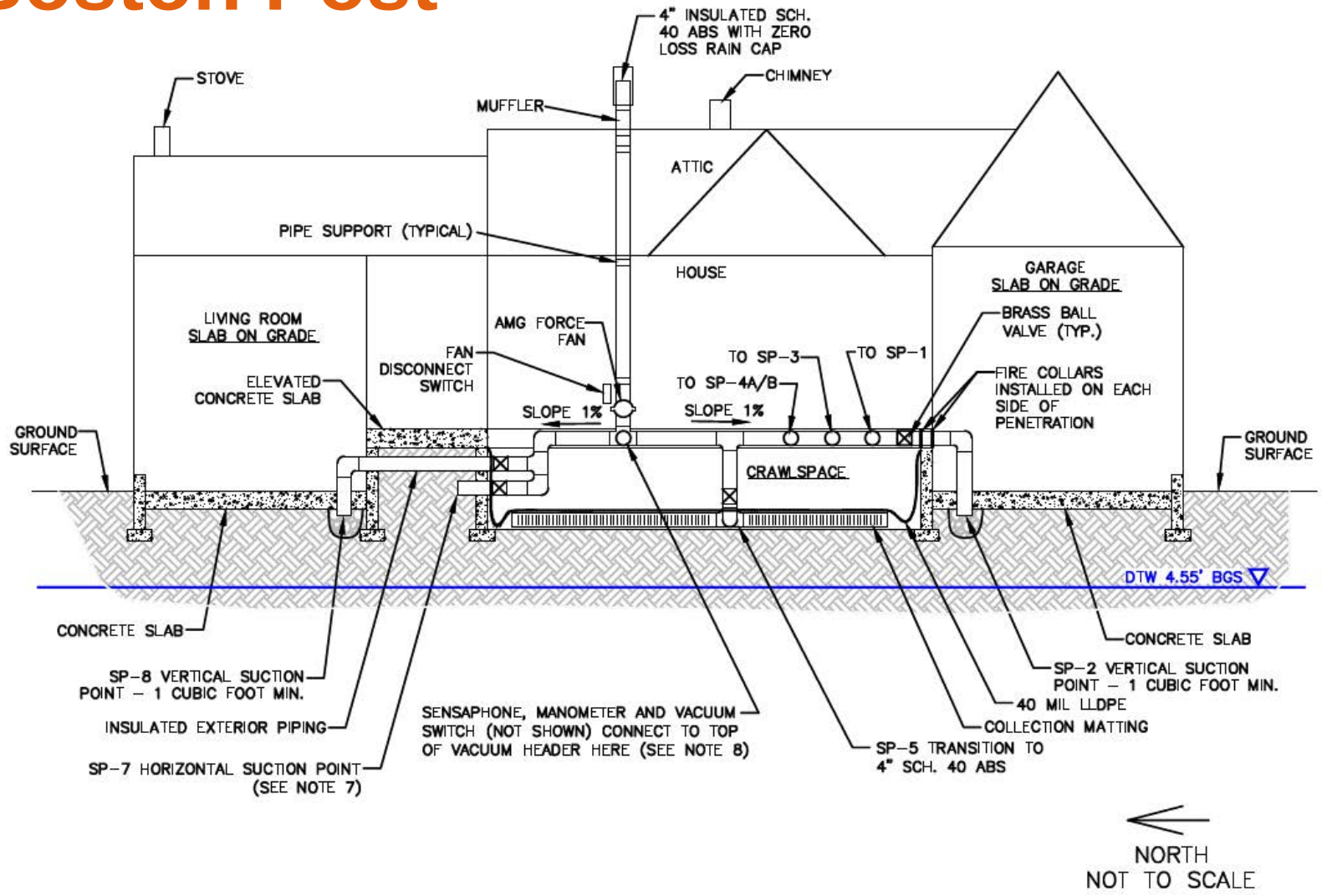
Up to 12 Sampling Events - One Exceedances of VC Criteria December 2018

12141 Boston Post



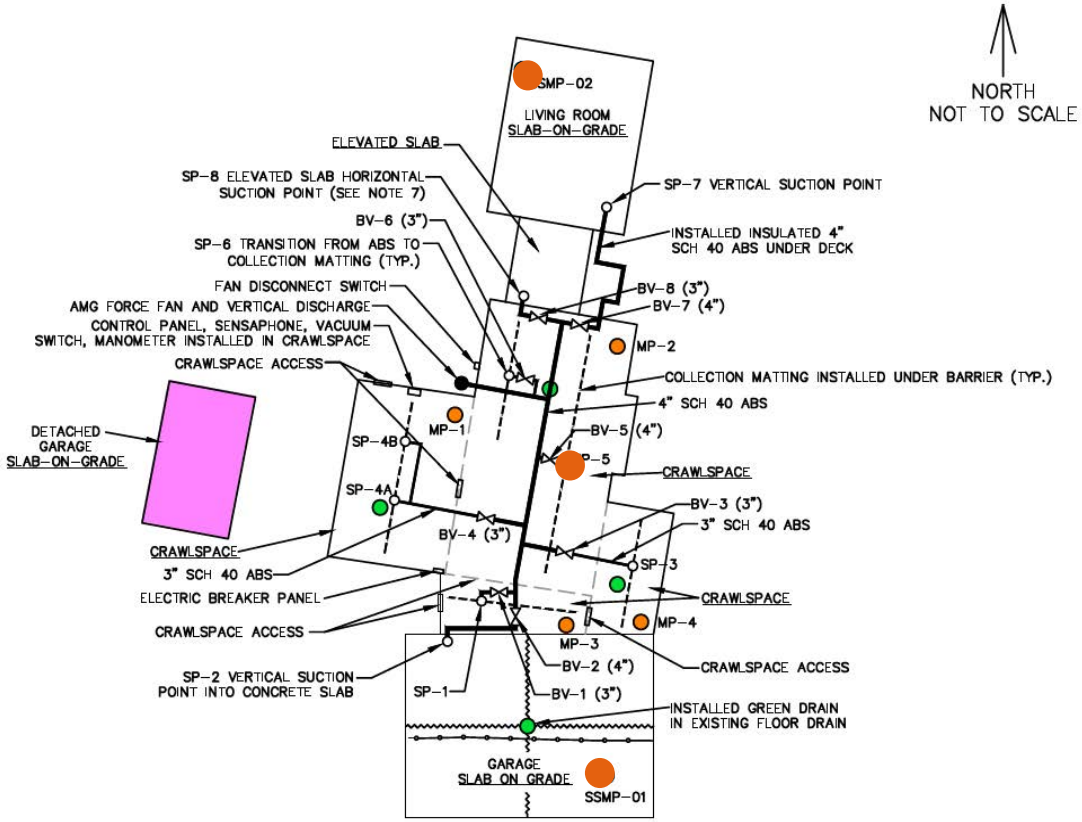
Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m3
Sub-Slab Vapor (SSMP)	10/25/2018	SSMP-01	Pre Mitigation	< 2.9
	3/13/2019	SSMP-01		< 3.3
	5/22/2019	SSMP-01	Post Mitigation	< 3.6
	10/25/2019	SSMP-01		< 3.2
	1/3/2020	SSMP-01	OMM	< 3.1
	7/21/2020	SSMP-01		< 3.3
	9/16/2020	SSMP-01		< 3.3
	9/16/2020	SSMP-02		< 3.3
Crawl Space Indoor Air (IACS)	10/25/2018	IACS-03	Pre Mitigation	< 0.43
Main Floor Indoor Air (IAF)	10/25/2018	IAF-02	Pre Mitigation	< 0.49
	5/22/2019	IAF-02	Post Mitigation	< 0.46
		DUP-02		< 0.087
	10/25/2019	IAF-02	OMM	< 0.43
	1/3/2020	IAF-02		< 0.50
	7/21/2020	IAF-02		< 1.5
	9/16/2020	IAF-02		< 0.43
Attached Garage Indoor Air (IAG)	10/25/2018	IAG-01	Pre Mitigation	< 1.5
	5/22/2019	IAG-01	Post Mitigation	< 0.46
		DUP-03		< 0.44
	10/25/2019	IAG-01	OMM	< 0.44
	1/3/2020	IAG-01		< 0.49
	7/21/2020	IAG-01		< 4.3
	9/16/2020	IAG-01		< 1.1
Detached Garage Indoor Air (IAG)	10/25/2018	IAG-04	Pre-Mitigation	< 2.1
	3/13/2019	IAG-04		< 0.46
		DUP-01		< 2.2
	5/22/2019	IAG-04		< 0.48
		DUP-04		< 0.38
	10/25/2019	IAG-04	Post Mitigation	< 0.43
	1/3/2020	IAG-04	OMM	< 0.98
	7/21/2020	IAG-04		< 4.4
	9/16/2020	IAG-04		< 0.44

12141 Boston Post



Summary of Recommendations

- Discontinue O&M of shed Retro Coat
- Turn off existing SMD/SSD in crawlspace and slab areas
- Continue quarterly GW sampling
  - If GW concentration MW-141S or MW-160S is greater than criteria or MW-95S is greater than historic peak of 1.1 µg/L ➡ SS sample quarterly at SSMP-01, SSMP-02, and beneath crawlspace barrier (SP-5) until GW decreasing
  - If sample at SSMP-01, SSMP-02, or beneath crawlspace barrier exceeds residential sub-slab VIAC ➡ Restart existing SMD/SSD system and resume O&M of Retro Coat at shed
- Leave mitigation system in place.

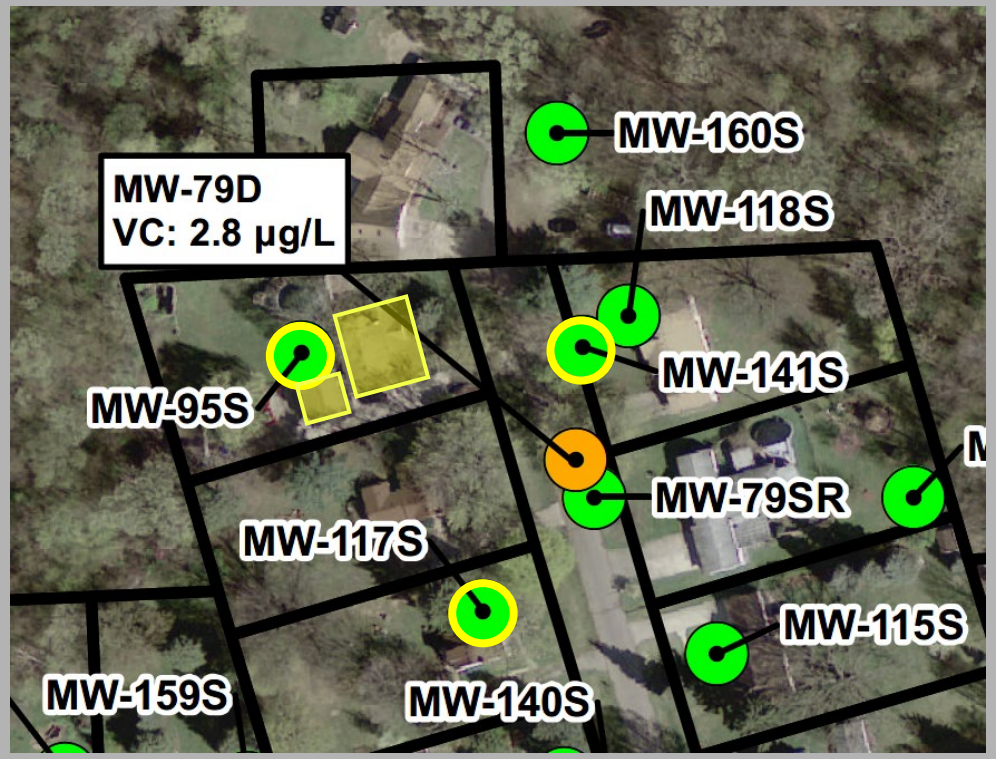


12131 Boston Post

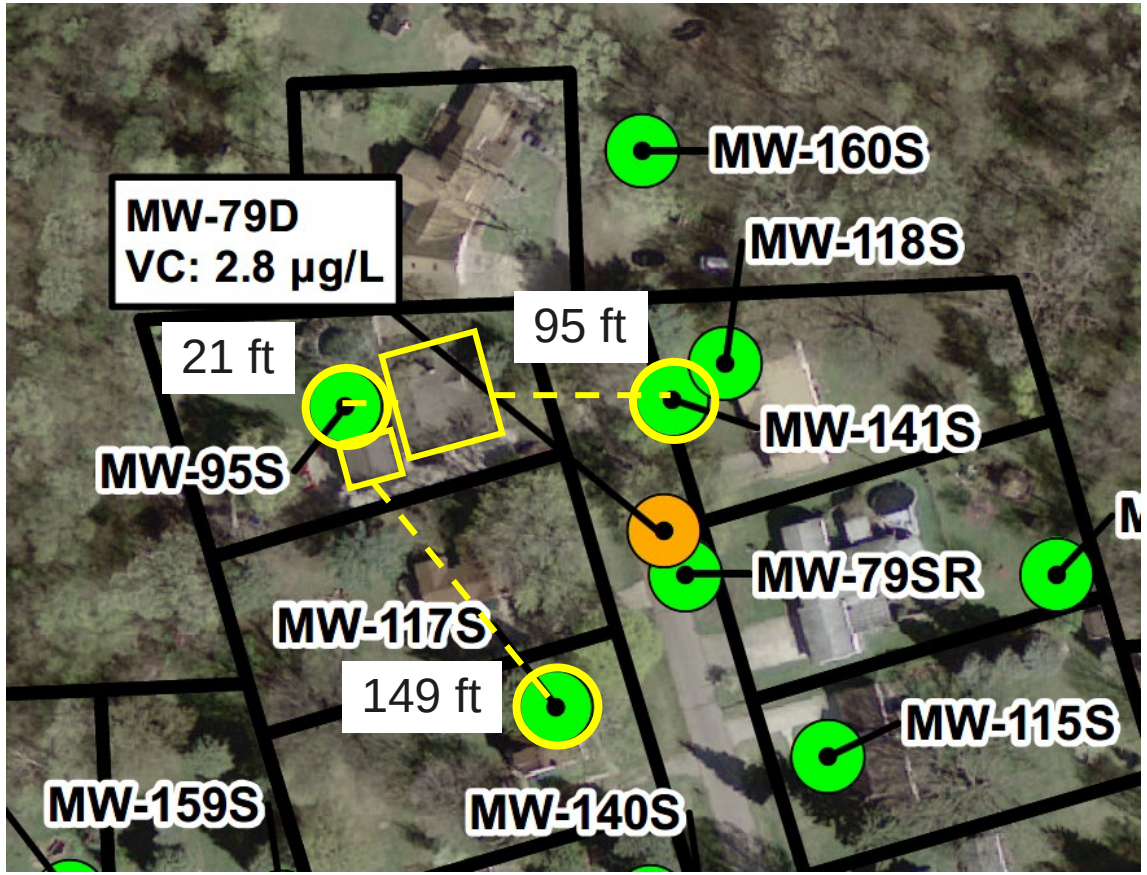
- **Structure is outside buffer**
  - **MW-141S – all 12 rounds ND**
  - **MW-117S – historic peak 1.1 µg/L**
  - **MW-95S – historic peak 1.1 µg/L**
- All 5 Rounds SS data – ND
  - 2 pre-mitigation and 3 post mitigation at SSMP-01

Recommendations

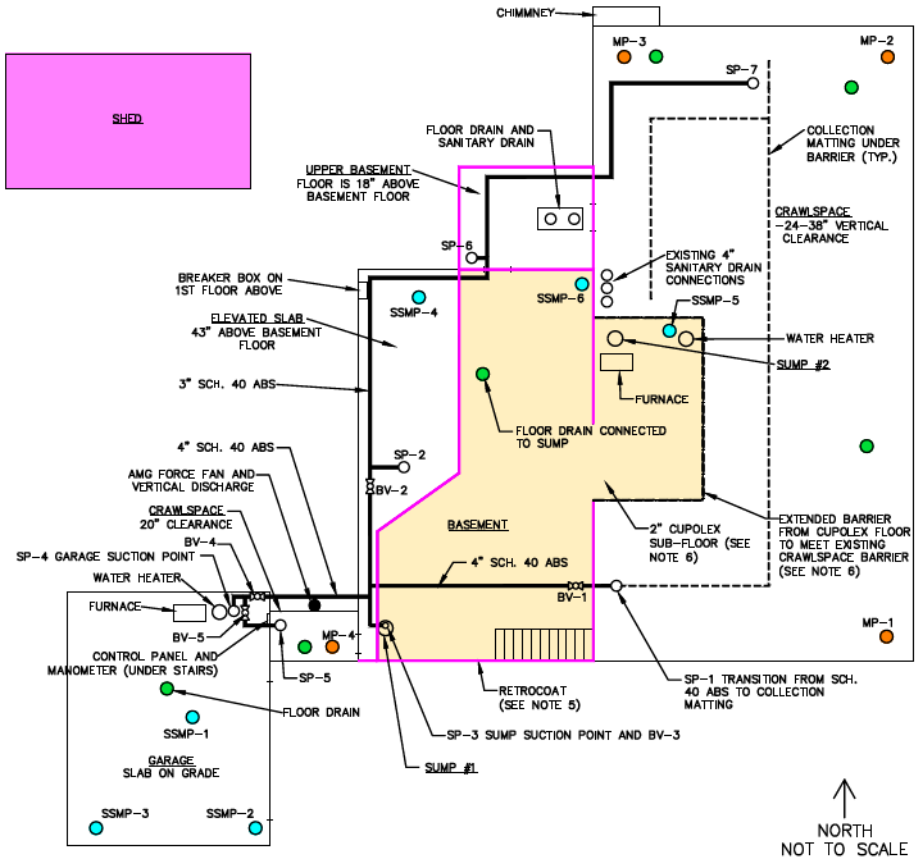
- Basement – Turn off Mitigation and Discontinue O&M of Retro-Coat
- Crawlspace and Basement – Turn off SMD
- Shed – Discontinue O&M of Retro-Coat
- Continue GW sampling (MW-141S, MW-117S, and MW-95S)



12131 Boston Post – Distance to Surrounding Wells



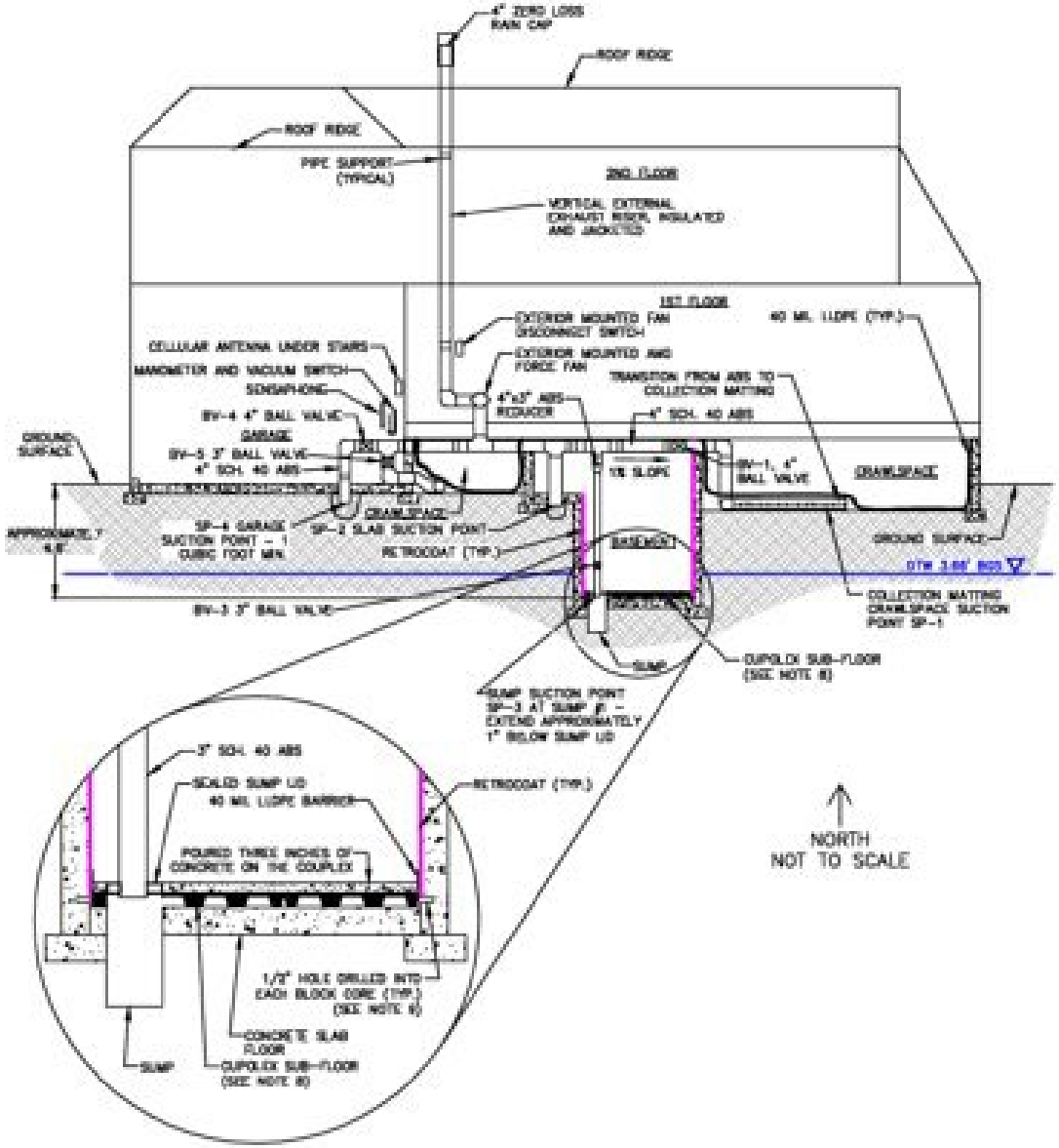
12131 Boston Post



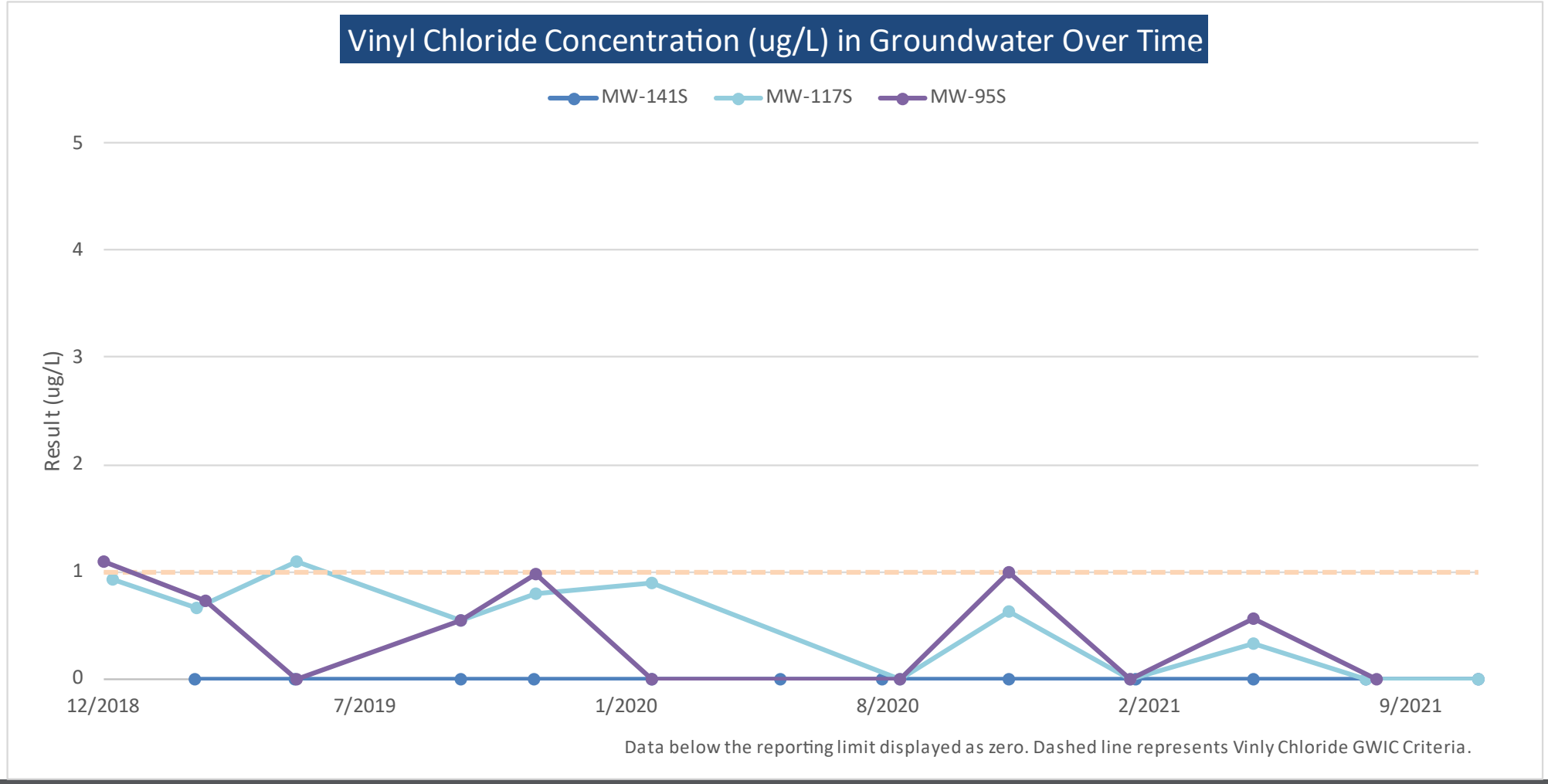
Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m³
Sub-Slab Vapor (SSMP)	11/8/2018	SSMP-01	Pre Mitigation	< 3.0
	2/19/2019	SSMP-01		< 2.9
	5/3/2019	SSMP-01	Post Mitigation	< 3.2
	8/1/2019	SSMP-01	OMM	< 3.2
	1/21/2020	SSMP-01		< 3.2
Basement Indoor Air (IAB)	11/8/2018	IAB-04	Pre Mitigation	< 0.42
	2/19/2019	IAB-04		< 0.40
	5/3/2019	IAB-05		< 0.43
		DUP-02		< 0.40
	8/1/2019	IAB-04	Post Mitigation	< 0.44
		DUP-01		< 0.37
	1/21/2020	IAB-04	OMM	< 0.43
Main Floor Indoor Air (IAF)	11/8/2018	IAF-01	Pre Mitigation	< 0.43
	2/19/2019	IAF-01		< 0.42
	5/3/2019	IAF-01		< 0.43
		DUP-01		< 0.43
	8/1/2019	IAF-01	Post Mitigation	< 0.40
	1/21/2020	IAF-01	OMM	< 0.44
Garage Indoor Air (IAG)	11/8/2018	IAG-03	Pre Mitigation	< 0.44
	2/19/2019	IAG-03		< 0.43
	5/3/2019	IAG-03	Post Mitigation	< 0.43
		DUP-03		< 0.42
	8/1/2019	IAG-03	OMM	< 0.44
	1/21/2020	IAG-03		< 0.43

Sample Location	Sample Date	Sample ID	Vinyl chloride µg/m³
Sump Water	10/29/2018	SUMP1-01	< 1.0
	10/29/2018	SUMP2-01	< 1.0
	2/18/2019	SUMP1-01	< 1.0
	2/18/2019	SUMP2-01	< 1.0
	5/3/2019	SUMP2-01	< 1.0
	8/1/2019	SUMP1-01	< 1.0
	1/20/2020	SUMP-01	< 1.0

12131 Boston Post



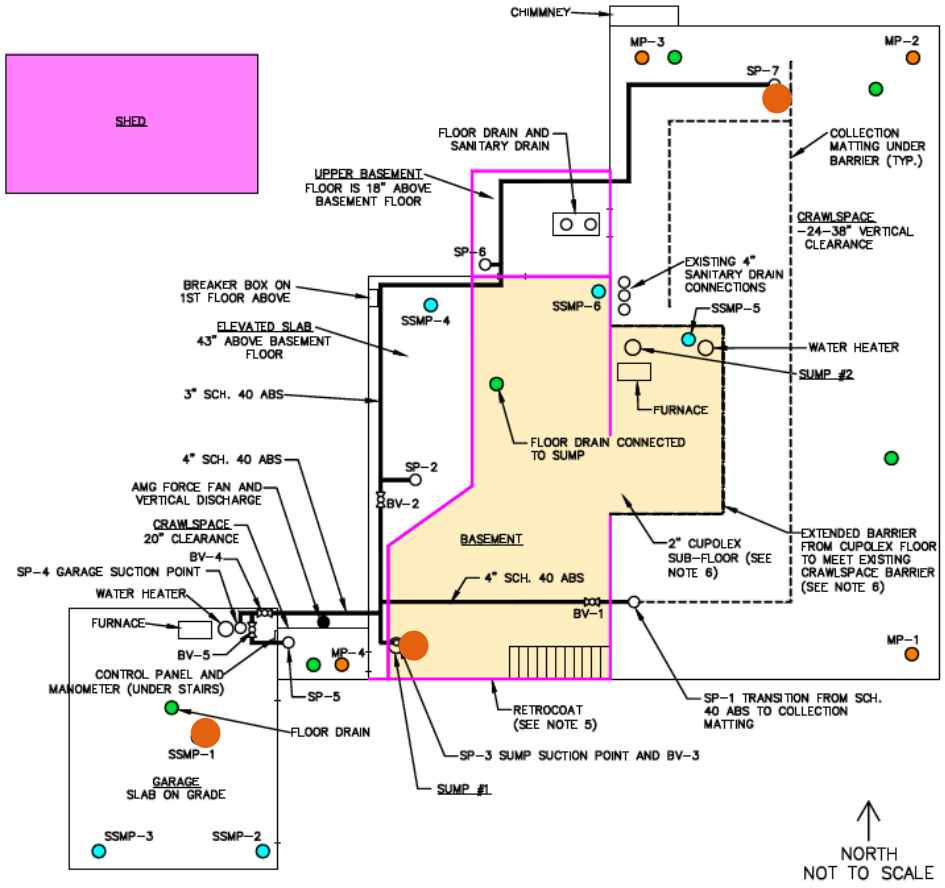
12131 Boston Post



12 Sampling Events - Exceedances of VC Criteria December 2018 & May 2019

Summary of Recommendations

- Discontinue O&M of shed
- Discontinue O&M of basement wall Retro Coat
- Turn off existing SSD/SMD in basement and crawlspace.
- Continue quarterly GW sampling
  - If GW concentration at MW-141S is greater than criteria or if either MW-95S or MW-117S is greater than historic peak of 1.1 µg/L ➡ SS sample quarterly at SSMP-1, within Cupolex at SP-3, and beneath barrier at SP-7 until GW decreasing
  - If SS sample at SSMP-1, beneath barrier, or within Cupolex exceeds residential sub-slab VIAC ➡ Restart existing SSDS and resume O&M of Retro Coat in basement and shed
  - Leave mitigation system in place.



12089 Boston Post

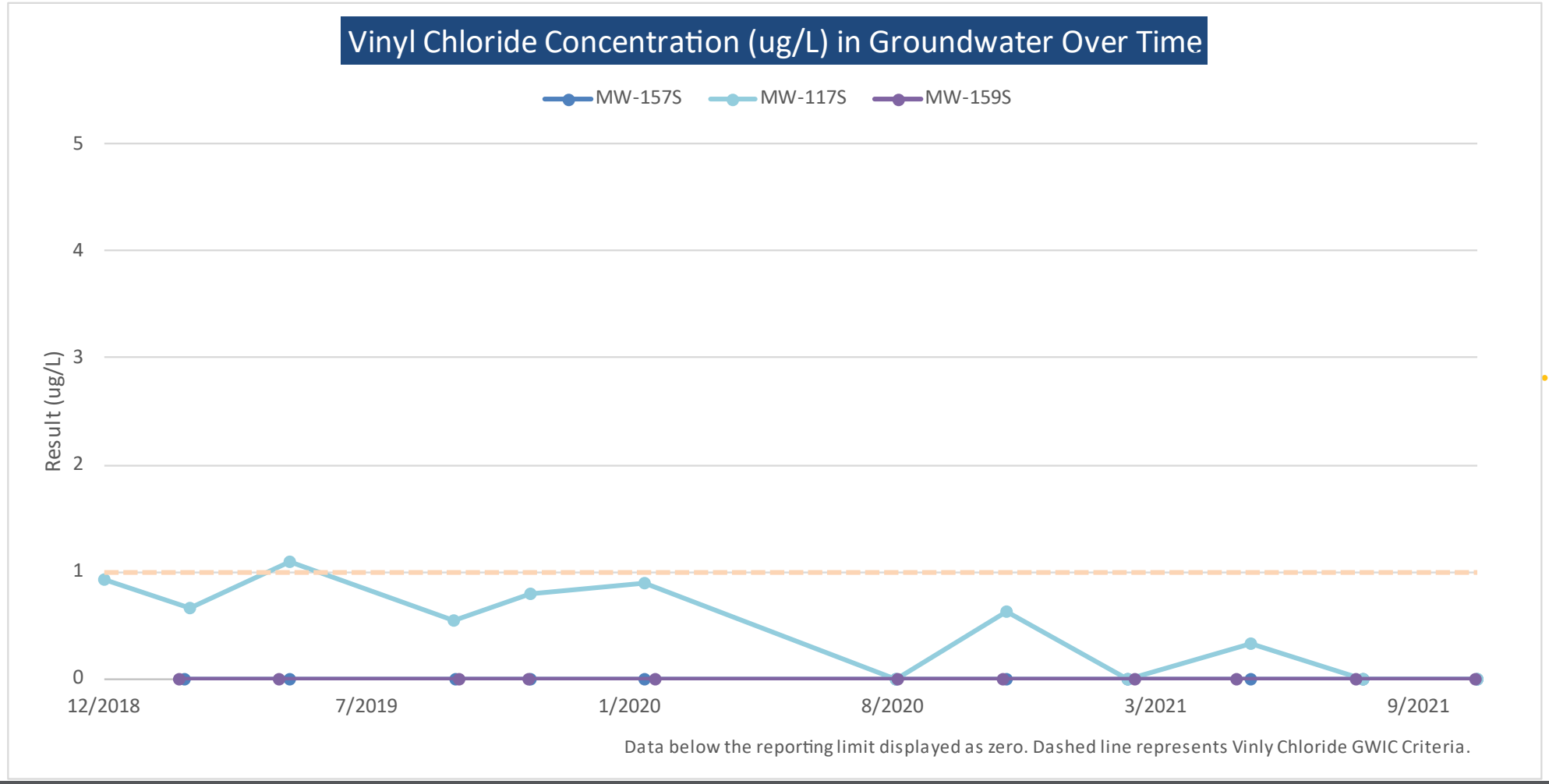
- **Structure is outside the buffer**
  - **MW-157S – all 12 rounds ND**
  - **MW-159S – all 12 rounds ND**
  - **MW-117S – historic peak 1.1 µg/L**
- All 5 Rounds SS data – ND
  - 3 pre-mitigation and 2 post mitigation at SSMP-01 and SSMP-02 in the basement
  - 4 at SSMP-03 in garage

Recommendations

- Garage – Discontinue O&M of Retro Coat
- Basement – Turn off SSD
- Continue GW sampling (MW-117S, MW-157S, and MW-159S)

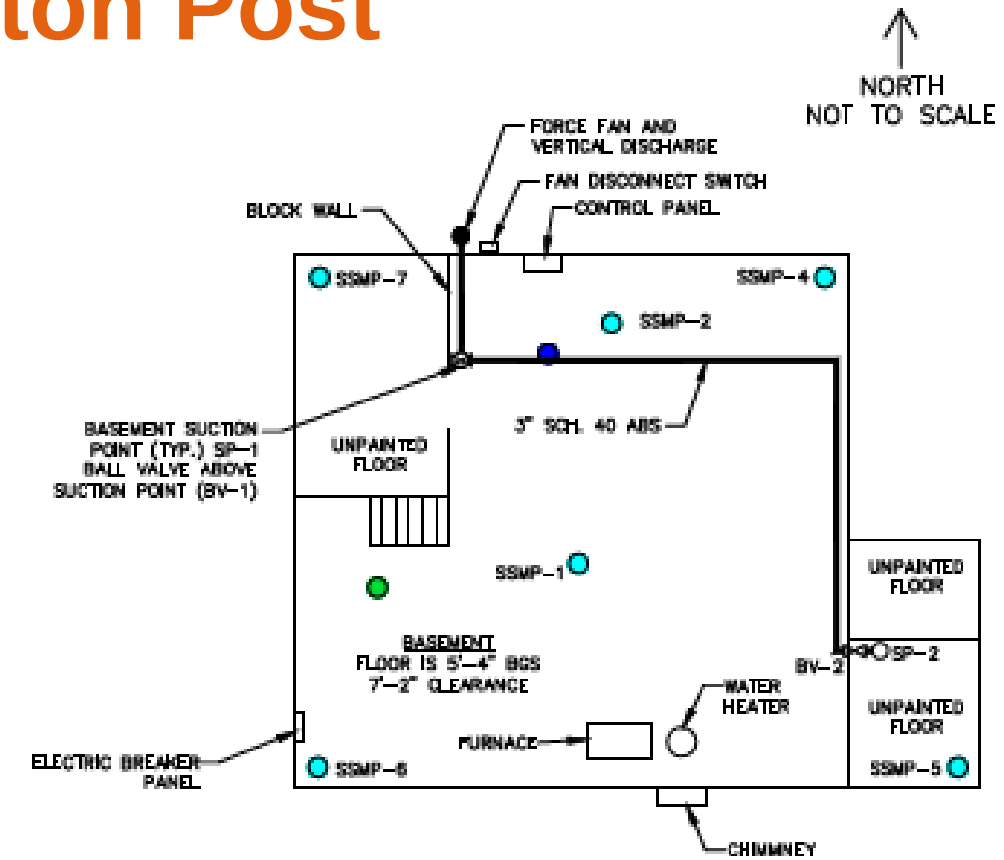
12089 Boston Post – Distance to Surrounding Wells

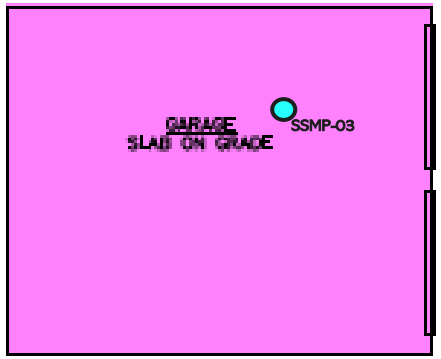
12089 Boston Post



12 Sampling Events - One Exceedance of VC Criteria May 2019

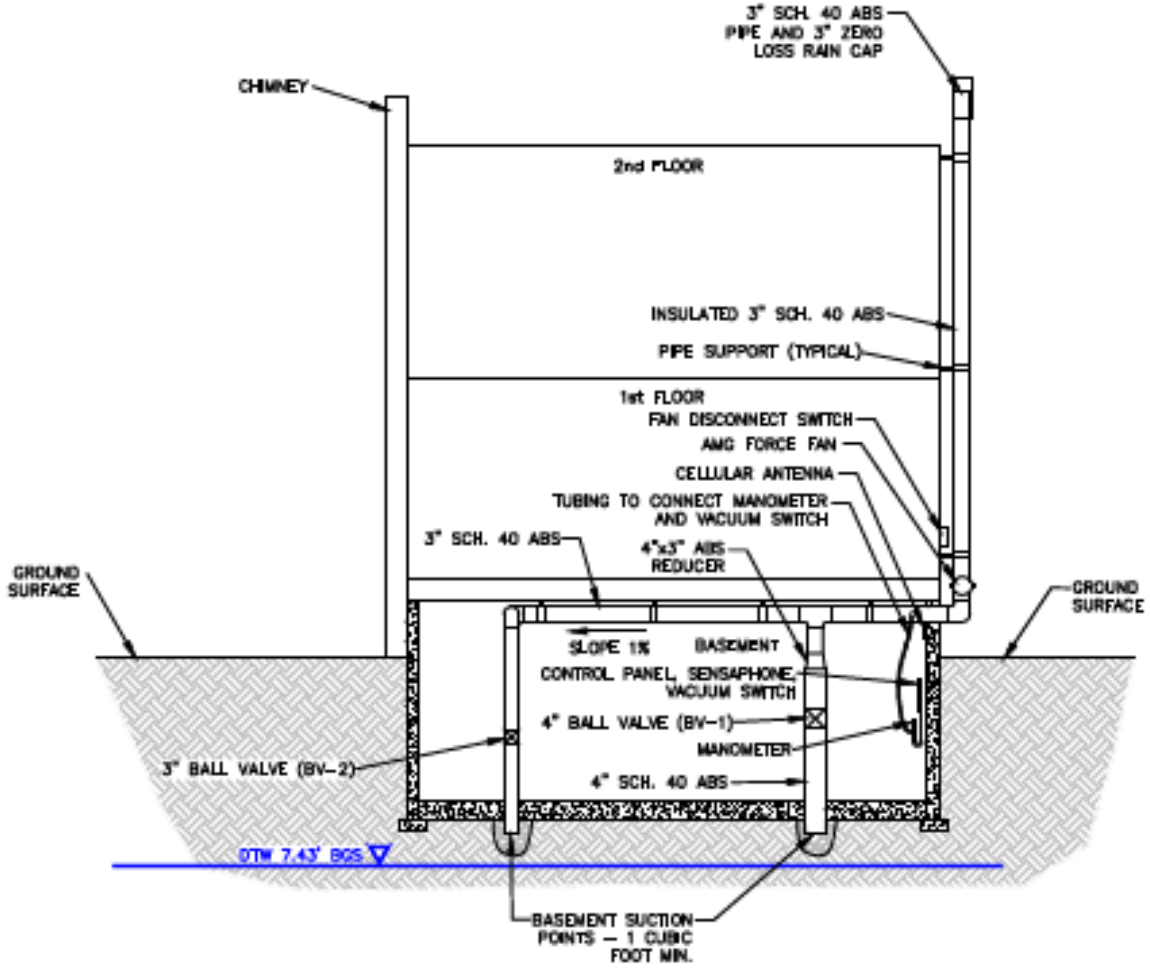
12089 Boston Post





Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m³
Basement (SSMP)	10/9/2018	SSMP-01	Pre Mitigation	< 3.0
	10/9/2018	SSMP-02		< 2.8
	2/21/2019	SSMP-01		< 3.2
	2/21/2019	SSMP-02		< 61
	4/24/2019	SSMP-01		< 3.2
	4/24/2019	SSMP-02		< 3.1
	7/10/2019	SSMP-01	Post Mitigation	< 3.2
	7/10/2019	SSMP-02		< 3.3
	1/17/2020	SSMP-01	OMM	< 3.1
	1/17/2020	SSMP-02		< 3.3
Garage (SSMP)	2/21/2019	SSMP-03	Pre Mitigation	< 3.4
	4/24/2019	SSMP-03		< 3.0
	7/11/2019	SSMP-03		< 3.2
	1/17/2020	SSMP-03	OMM	< 3.0
Basement Indoor Air (IAB)	2/21/2019	IAB-01	Pre Mitigation	< 0.44
		DUP-01		< 0.41
	4/24/2019[1]	IAB-01		< 8.2
		DUP-02		< 8.7
	7/10/2019	IAB-01	Post Mitigation	< 0.44
		DUP-01		< 0.44
	1/17/2020	IAB-01	OMM	< 0.41
Main Floor Indoor Air (IAF)	10/9/2018	IAF-01	Pre Mitigation	< 0.43
	2/21/2019	IAF-01		< 0.42
	4/24/2019[1]	IAF-01		< 8.6
		DUP-03		< 9.3
	7/10/2019	IAF-01	Post Mitigation	< 0.42
	1/17/2020	IAF-01	OMM	< 0.42
Garage Indoor Air (IAG)	10/9/2018	IAG-01	Pre Mitigation	< 0.45
	2/21/2019	IAG-01		< 0.40
	4/24/2019[1]	IAG-01		< 8.4
		DUP-04		< 8.1
	7/10/2019	IAG-01		< 0.47
	1/17/2020	IAG-01	OMM	< 0.38

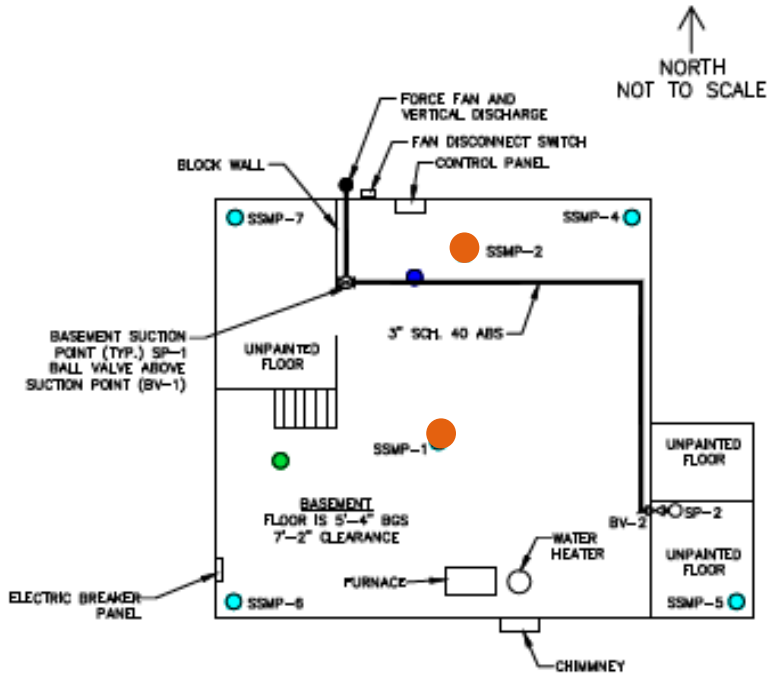
12089 Boston Post

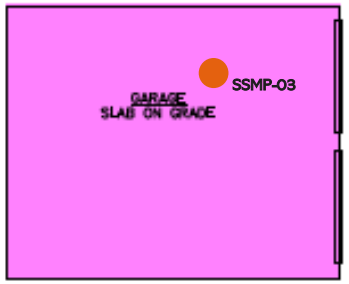


NORTH
NOT TO SCALE

Summary of Recommendations

- Discontinue O&M of garage Retro Coat
- Turn off existing SSD in basement
- Continue quarterly GW sampling
  - If GW concentration MW-157S or MW-159S is greater than criteria or MW-117S is greater than historic peak of 1.1 µg/L → SS sample quarterly at SSMP-01, SSMP-02, and SSMP-03 until GW decreasing
  - If SS sample at SSMP-01, SSMP-02, or SSMP-03 exceeds residential sub-slab VIAC → Restart existing SSD and resume O&M of Retro Coat at garage
- Leave mitigation system in place.



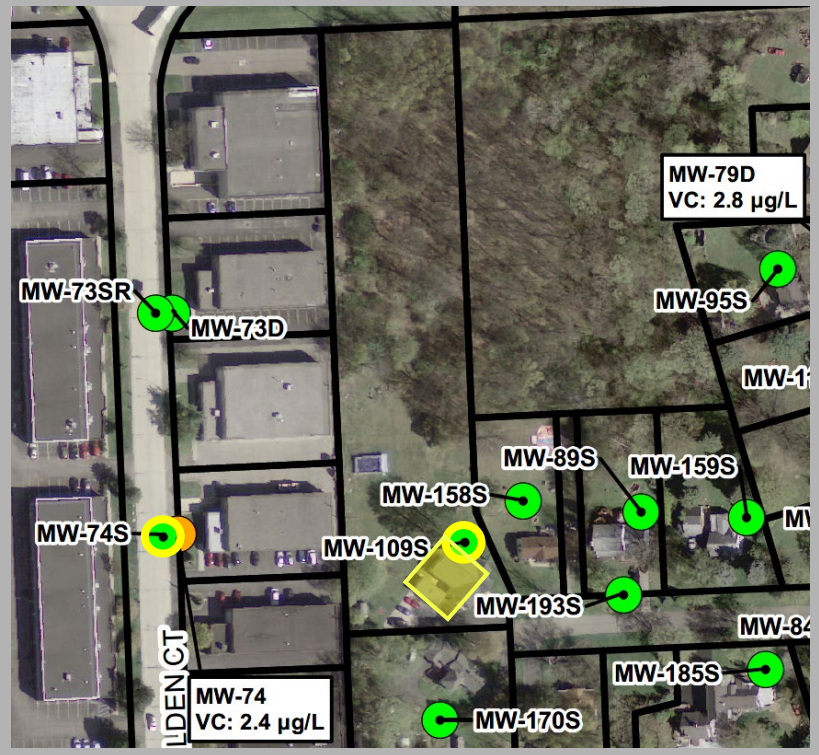


34990 Beacon

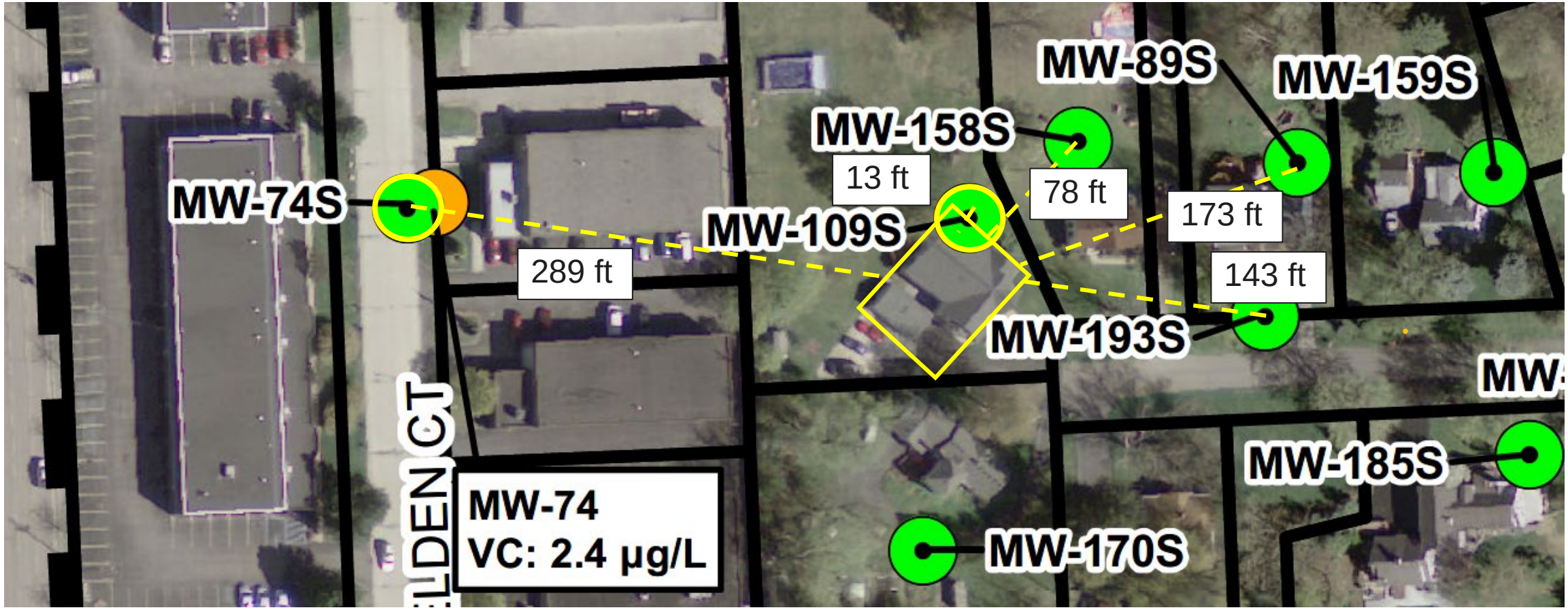
- **Structure is outside the buffer**
  - **MW-109S – all 12 rounds below criteria**
  - **MW-74S – all 13 rounds ND**

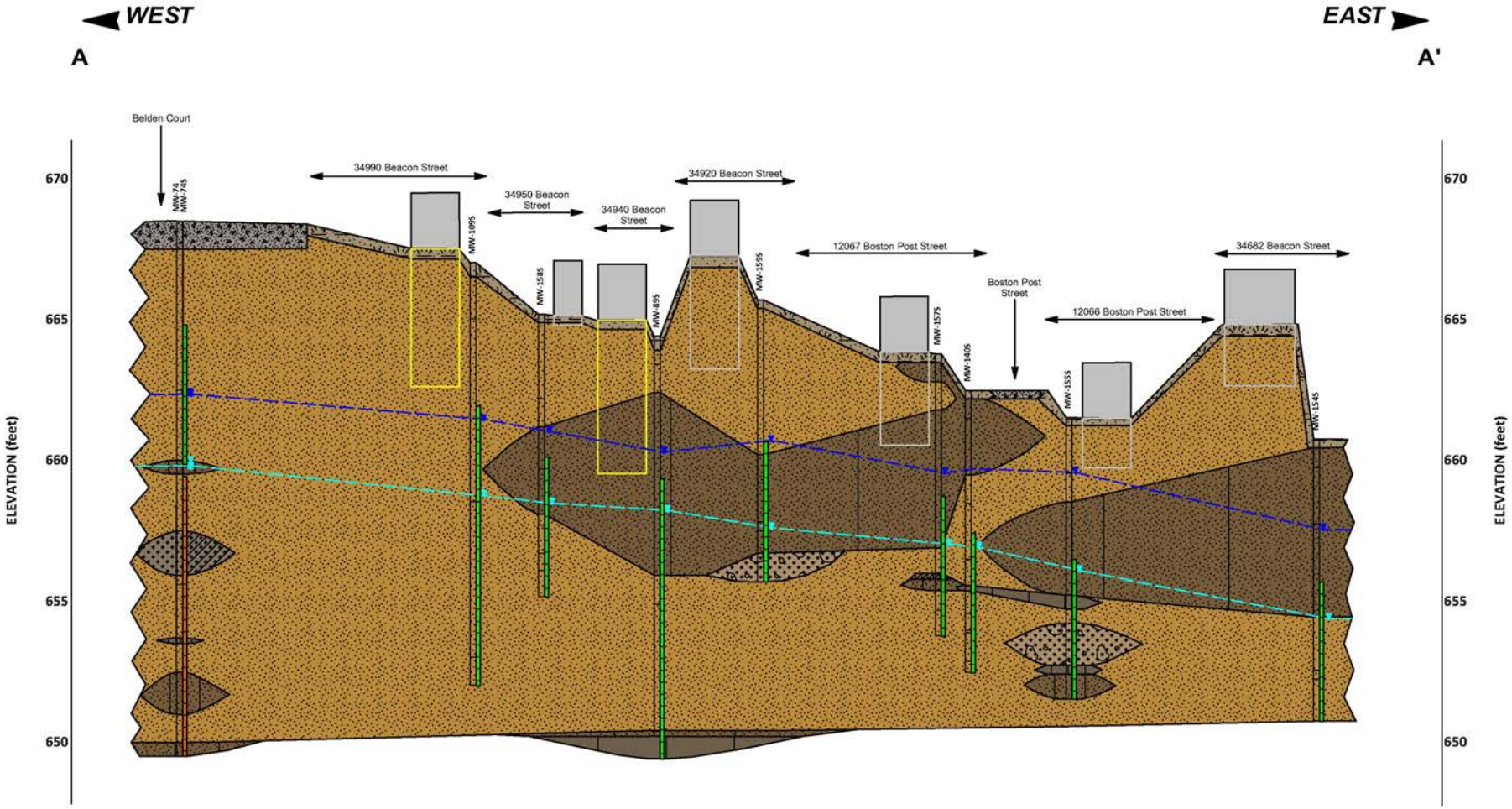
Recommendations

- Garage – No Mitigation
- Shed – Discontinue O&M of Retro Coat
- Basement – Discontinue O&M of Retro Coat
- Crawlspace – Turn off SMD
- Continue GW sampling (MW-109S, MW-74S)



34990 Beacon – Distance to Surrounding Wells





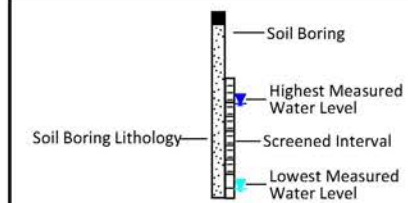
LEGEND

- Topsoil
- Silt
- Silty Sand
- Sand
- Gravelly Sand
- Clayey Sand
- Silty Clay
- Concrete

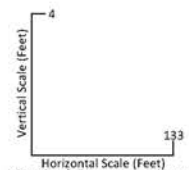
NOTES:

1. Groundwater analytical data flagging is based on data collected during fourth quarter 2021.
2. Groundwater elevations are based on depth to water gauging data collected through fourth quarter 2021 and are calculated using monitoring well top of casing elevations.
3. Ground surface elevations and depth of structure elevations are based on survey data where collected.
4. All geologic extrapolations shown in the cross-section are based on assumptions from the boring logs collected.
5. Residence extents not represented to scale.

- Groundwater sample does not exceed residential Drinking Water (DW) criteria
- Groundwater sample exceeds residential Drinking Water (DW) criteria



- Approximate Geologic Contact
- Approximate Highest Water Table
- Approximate Lowest Water Table
- Crawl Space or Slab on Grade
- Basement
- Property Boundary Extent



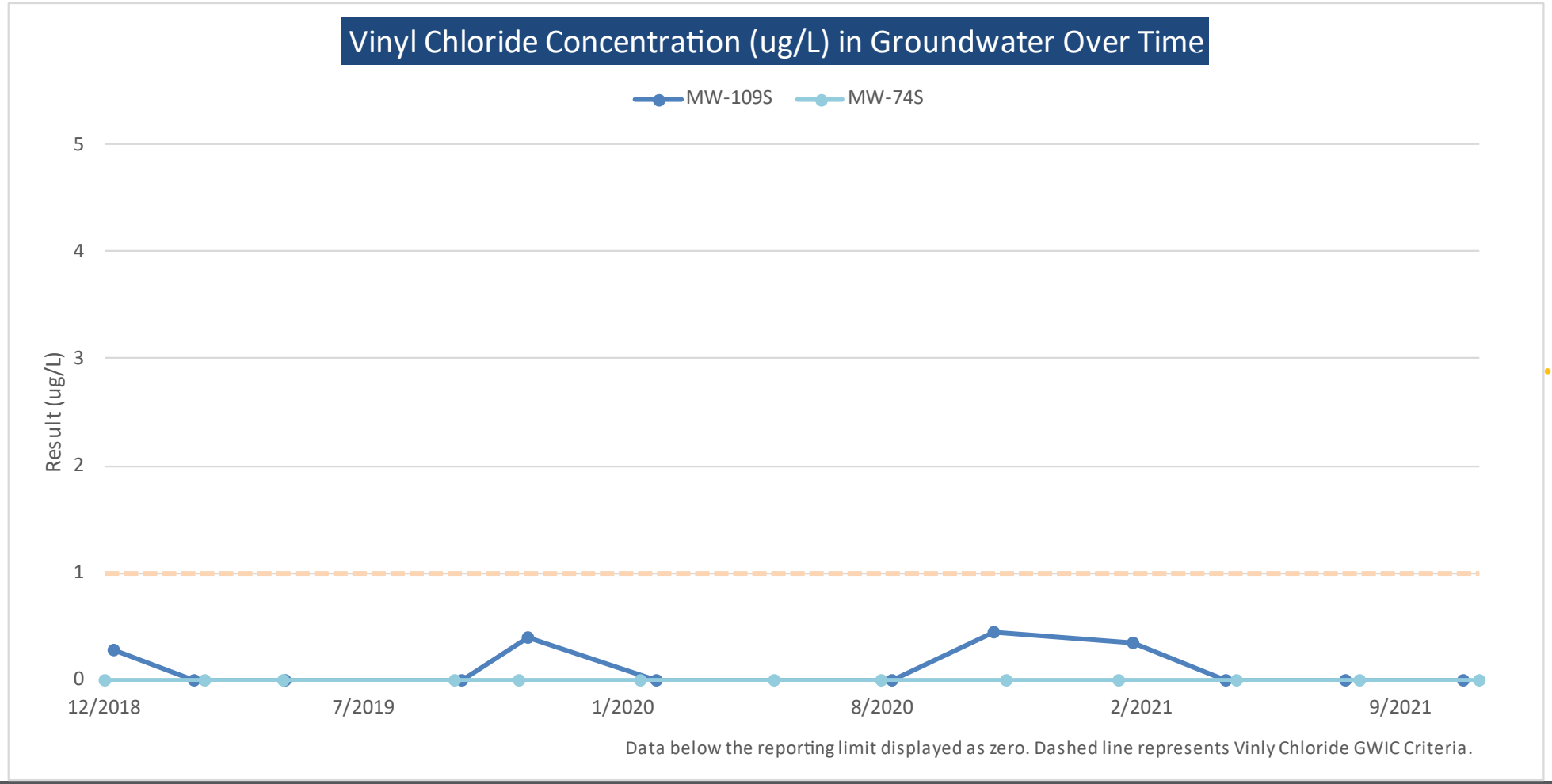
Vertical Exaggeration: 31.5x

Ford Livonia Automatic Transmissions Plant
Livonia, MI

Ford LTP Cross Section A-A'

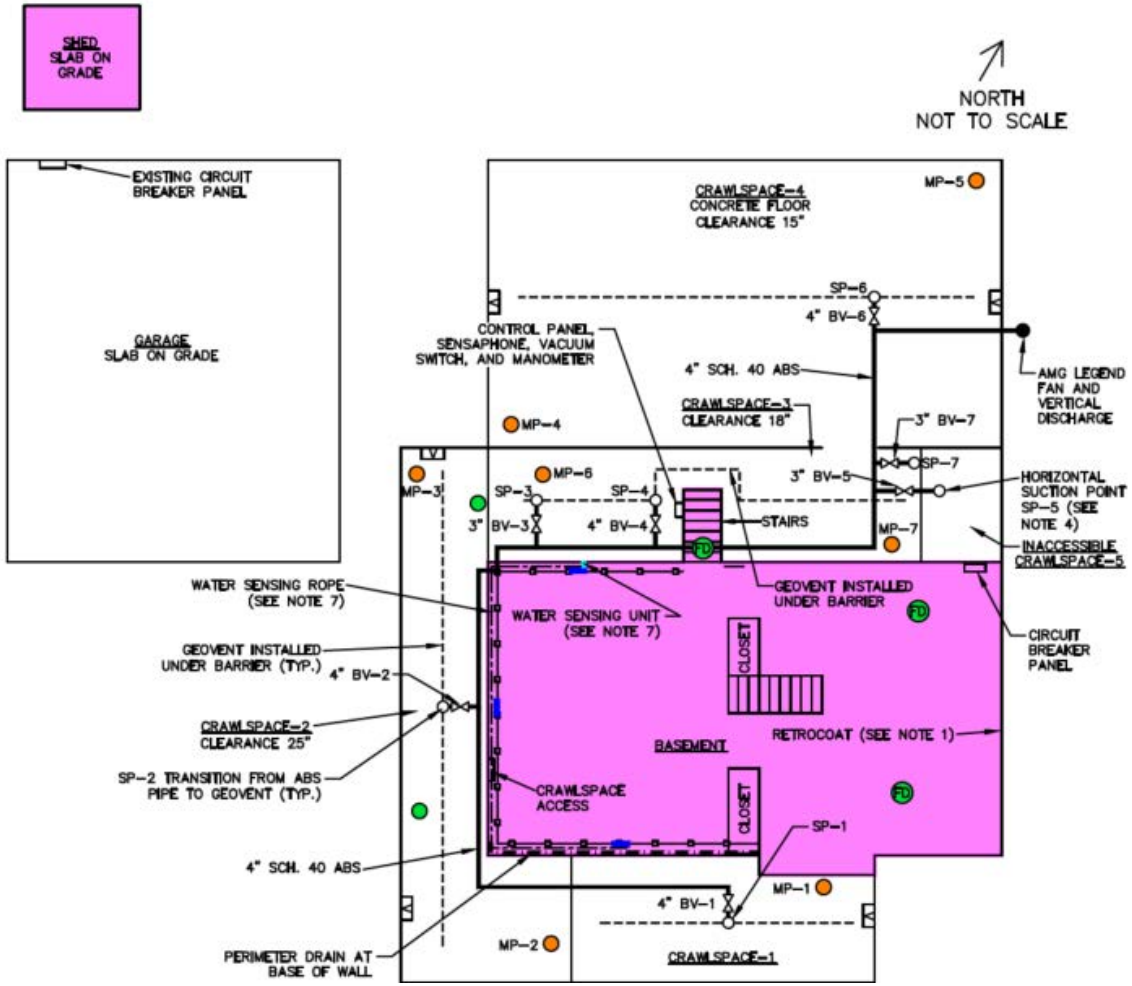
ARCADIS | FIGURE A-1

34990 Beacon



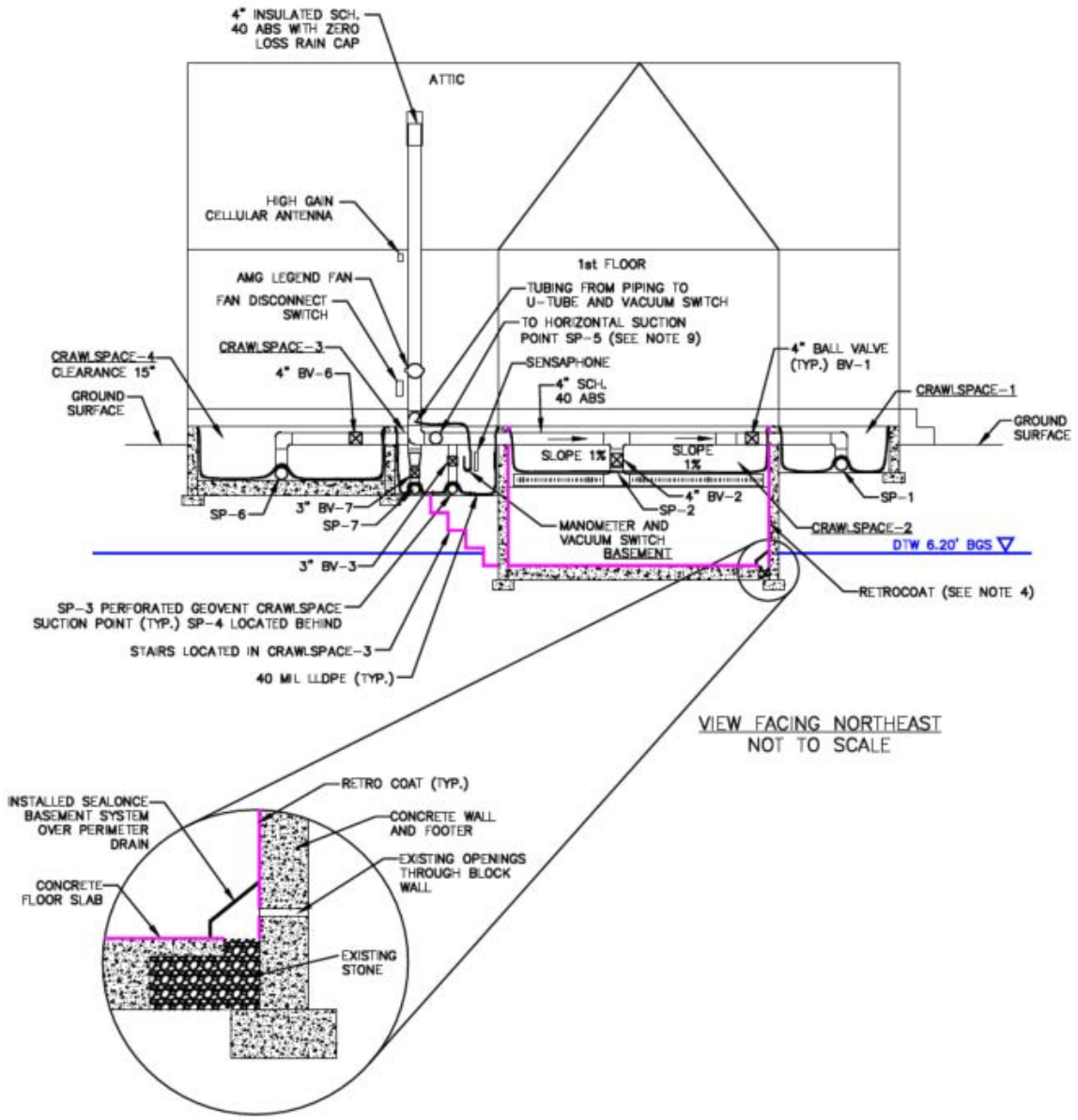
12 to 13 Sampling Events with No Exceedances of VC Criteria

34990 Beacon



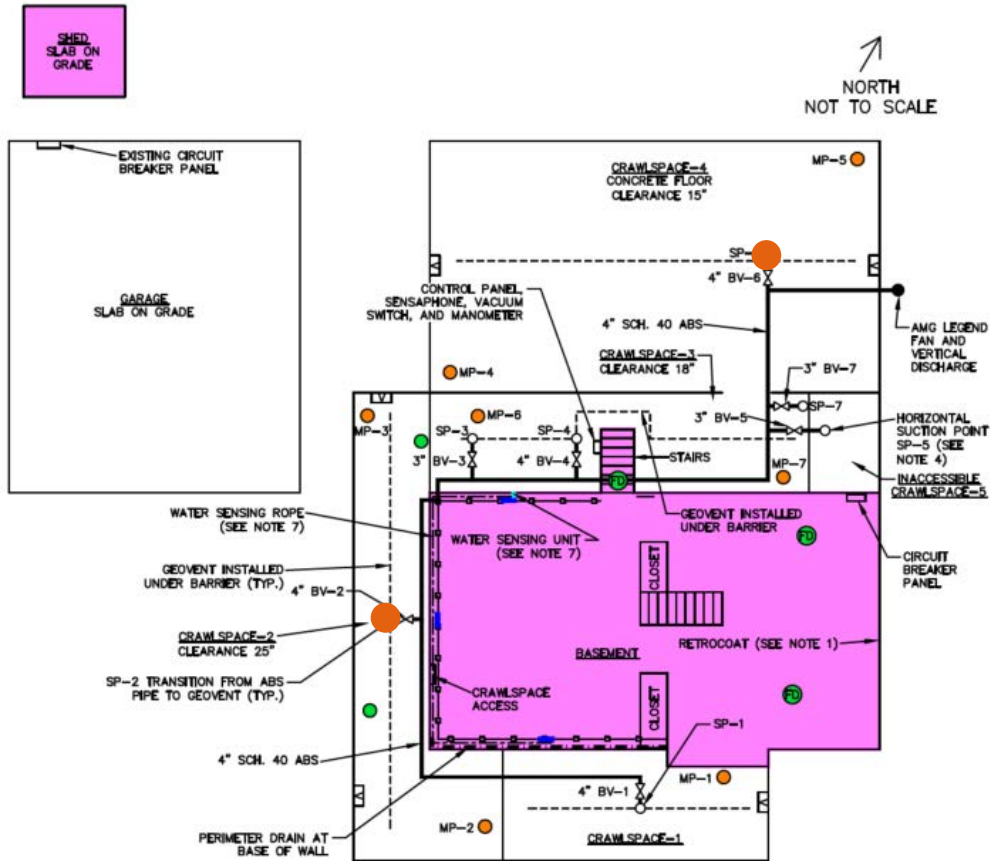
Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m^3
Crawl Space Indoor Air (IACS)	12/19/2018	IACS-04	Pre Mitigation	< 0.40
	12/19/2018	IACS-05		< 0.40
Basement Indoor Air (IAB)	12/19/2018	IAB-03	Pre Mitigation	< 0.44
	2/27/2019	IAB-03		< 0.43
	8/1/2019	IAB-03		< 0.47
	10/2/2019	IAB-03	Post Mitigation	< 0.44
	11/19/2020	IAB-03	OMM	<0.45
Main Floor Indoor Air (IAF)	12/19/2018	IAF-02	Pre Mitigation	< 0.42
	2/27/2019	IAF-02		< 0.42
	8/1/2019	IAF-02		< 0.44
	10/2/2019	IAF-02	Post Mitigation	< 0.88
	11/19/2020	IAF-02	OMM	<0.43
Garage Indoor Air (IAG)	12/19/2018	IAG-01	Pre Mitigation	< 0.40
	2/27/2019	IAG-01		< 0.41
	8/1/2019	IAG-01		< 0.23
	10/2/2019	IAG-01		< 1.1
	11/19/2020	IAG-01		<0.20

34990 Beacon



Summary of Recommendations

- No mitigation of detached garage
- Discontinue O&M of shed Retro Coat
- Discontinue O&M of basement Retro Coat
- Turn off existing SMD in crawlspace
- Continue quarterly GW sampling
  - If GW concentration MW-74S or MW-109S is greater than criteria ➡ Sample beneath crawlspace barrier at SP-2 and SP-6 until GW decreasing
  - If sample beneath barrier exceeds residential sub-slab VIAC ➡ Restart existing SMD; resume O&M of Retro Coat in basement and shed; and sample beneath or mitigate detached garage
- Leave mitigation system in place.



2 Unmitigated Properties with VC in GW less than 1 ppb – West of Plume

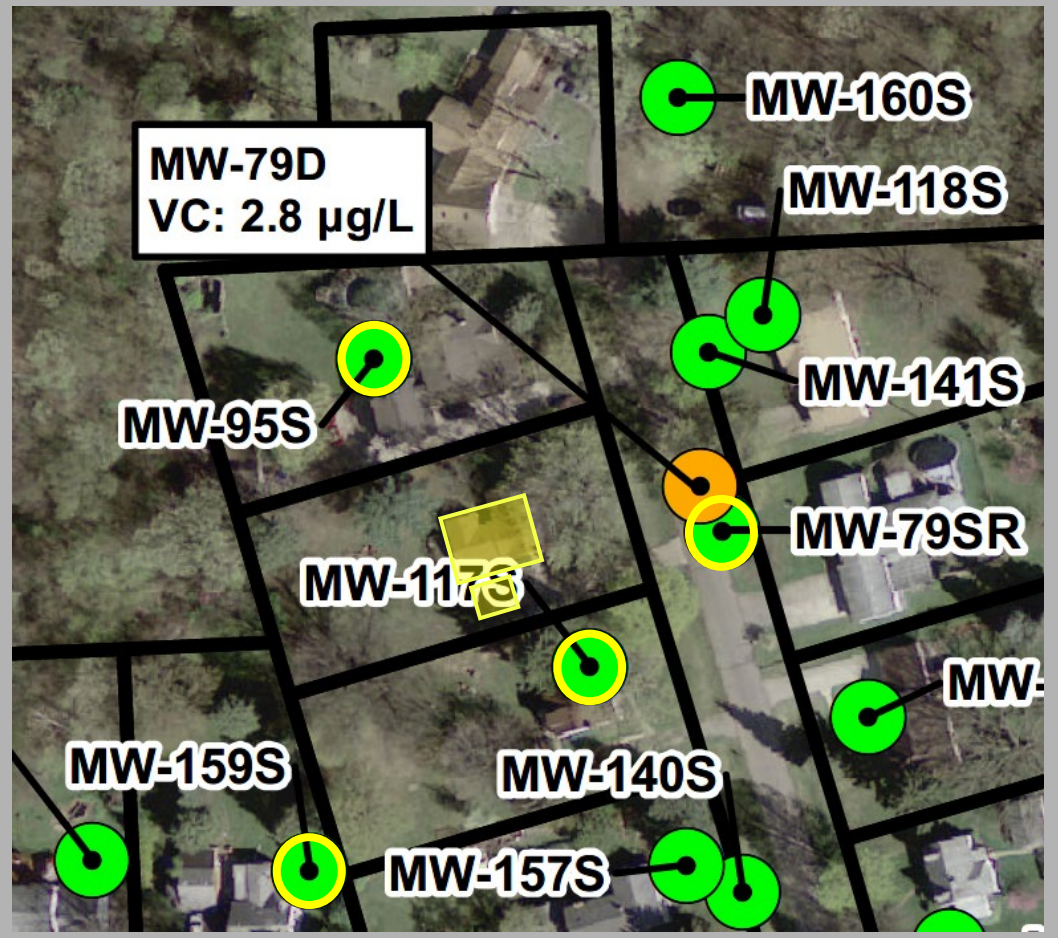
12121 Boston Post
12124 Boston Post

12121 Boston Post

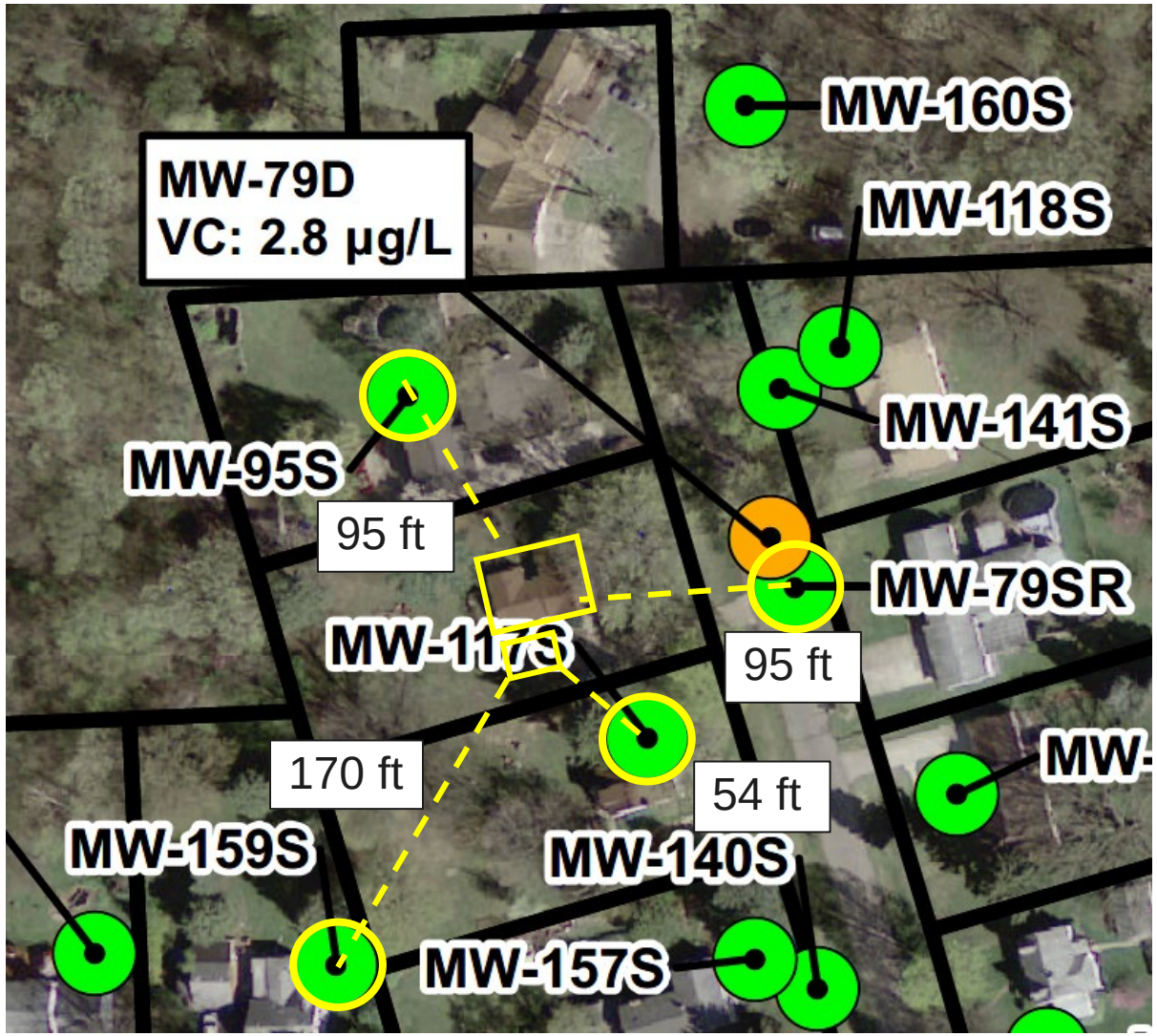
- **<u>Structure is outside the buffer</u>**
  - MW-159S – all 11 rounds ND
  - MW-79SR – all 13 rounds below criteria
  - MW-95S – historic peak 1.1 µg/L
  - MW-117S – historic peak 1.1 µg/L
- Structures include a home with a basement and crawlspace foundation and a detached garage

Recommendations

- No mitigation unless GW and SS data exceed criteria
- Install new GW well on property
- Continue GW sampling (MW-79SR, MW-95S, MW-117S, and MW-159S)
- Begin sub-slab sampling beneath garage and basement if possible



12121 Boston Post – Distance to Surrounding Wells

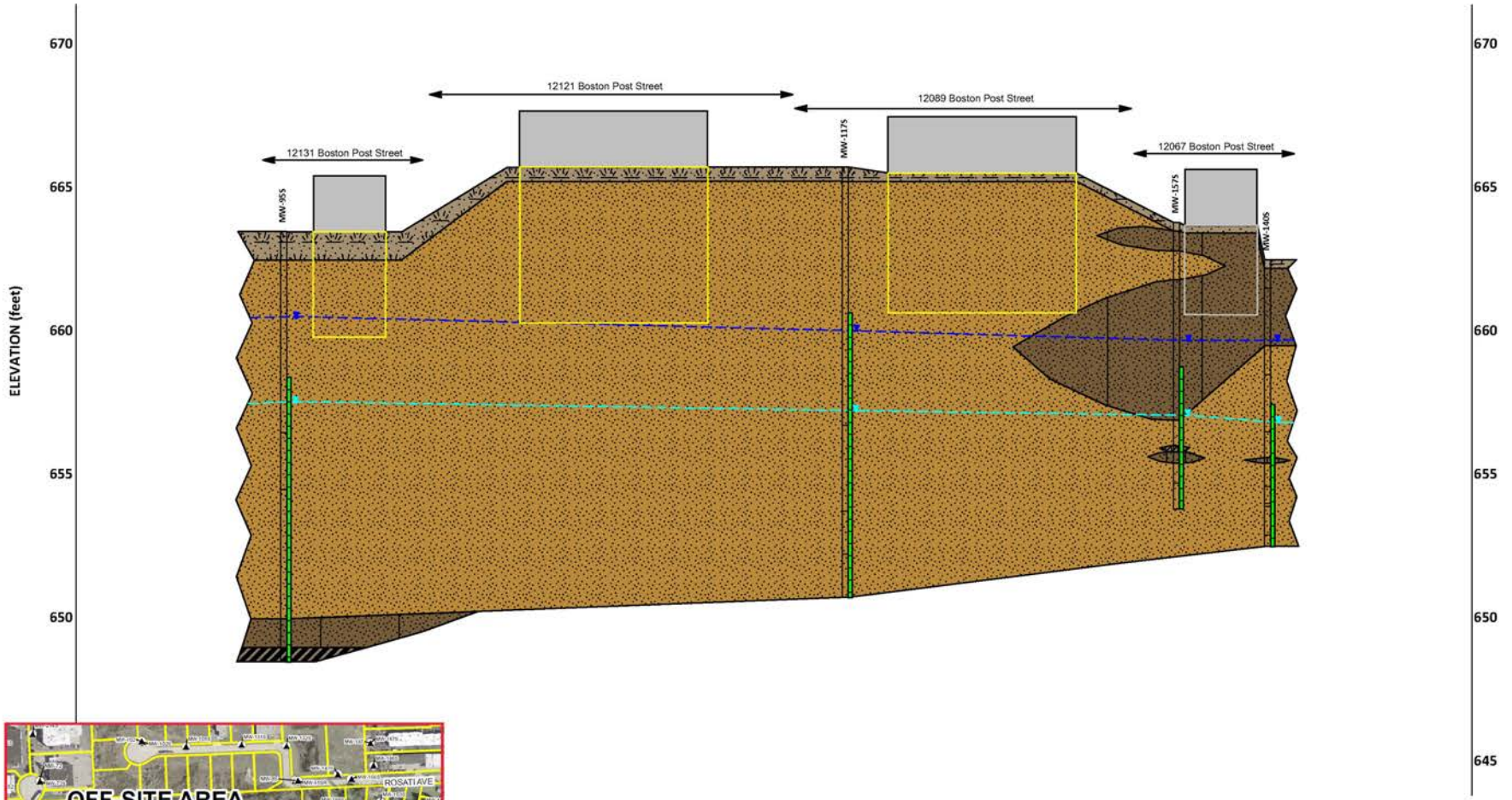


NORTHWEST

B

SOUTHEAST

B'



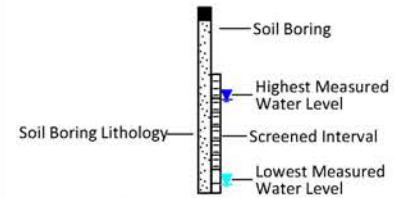
LEGEND

- Topsoil
- Silt
- Silty Sand
- Sand
- Gravelly Sand
- Clayey Sand
- Clay
- Concrete

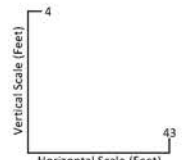
NOTES:

1. Groundwater analytical data flagging is based on data collected during fourth quarter 2021.
2. Groundwater elevations are based on depth to water gauging data collected through fourth quarter 2021 and are calculated using monitoring well top of casing elevations.
3. Ground surface elevations and depth of structure elevations are based on survey data where collected. Estimates used at 12121 Boston Post Street due to access restrictions.
4. All geologic extrapolations shown in the cross-section are based on assumptions from the boring logs collected.
5. Residence extents not represented to scale.

- Groundwater sample does not exceed residential Drinking Water (DW) criteria
- Groundwater sample exceeds residential Drinking Water (DW) criteria



- Approximate Geologic Contact
- Approximate Highest Water Table
- Approximate Lowest Water Table
- Crawl Space or Slab on Grade
- Basement
- Property Boundary Extent



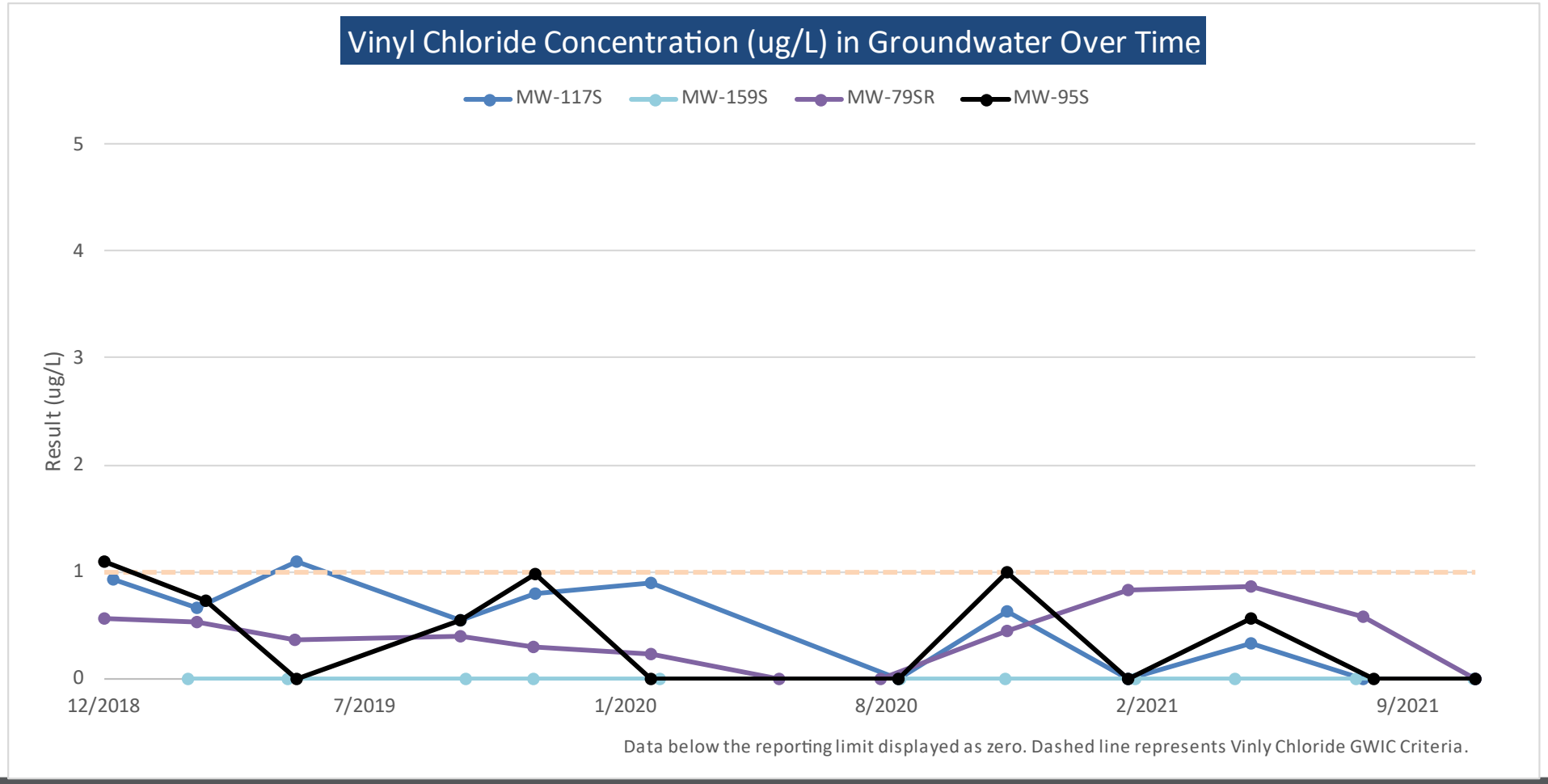
Vertical Exaggeration: 10x

Ford Livonia Automatic Transmissions Plant
Livonia, MI

Ford LTP Cross Section B-B'

ARCADIS | FIGURE A-2

12121 Boston Post



11 to 13 Sampling Events – No Substantial Exceedances of VC Criteria

Summary of Recommendations

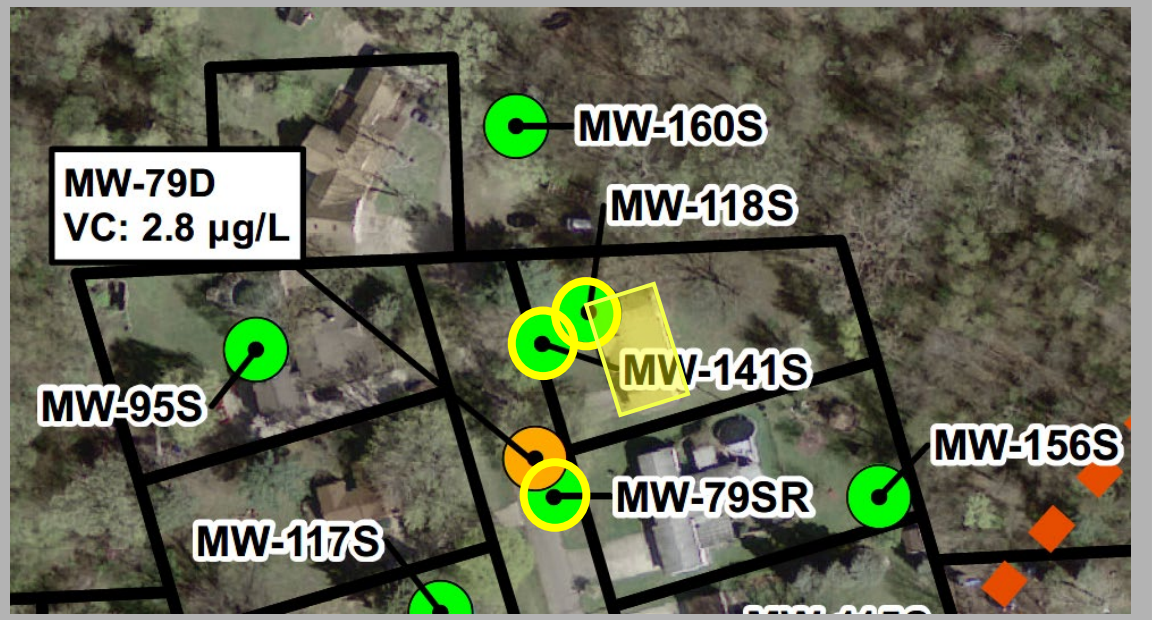
- Install GW well on property and begin quarterly GW sampling
- Complete 4 rounds of sub-slab sampling (garage and basement if possible)
- If sub-slab sample exceeds residential sub-slab VIAC ➡ Mitigate
- Continue quarterly GW sampling at new and surrounding wells (MW-79SR, MW-95S, MW-117S, MW-159S)
  - If GW concentration is greater than criteria or historic peak ➡ continue SS sample quarterly until GW decreasing
  - If sub-slab sample exceeds residential sub-slab VIAC ➡ Mitigate

12124 Boston Post

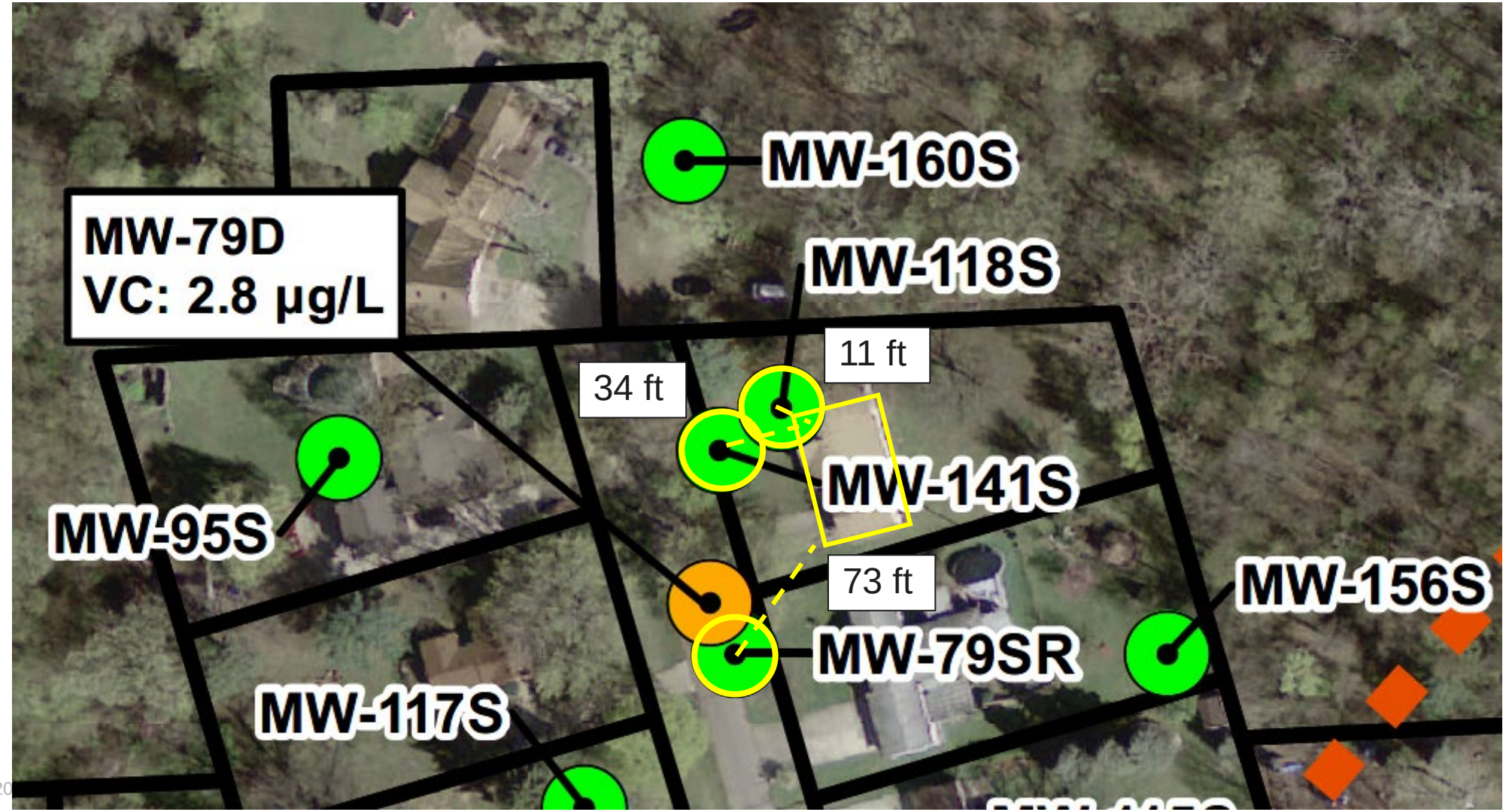
- **Structure is outside the buffer**
- **No detections above criteria in GW at surrounding MWs**
  - **MW-118S – all 12 rounds below criteria**
  - **MW-141S – all 12 rounds ND**
  - **MW-79SR - all 13 rounds below criteria**
- Home has a crawlspace foundation with attached garage
- **All 4 rounds of pre-mitigation SS data ND**

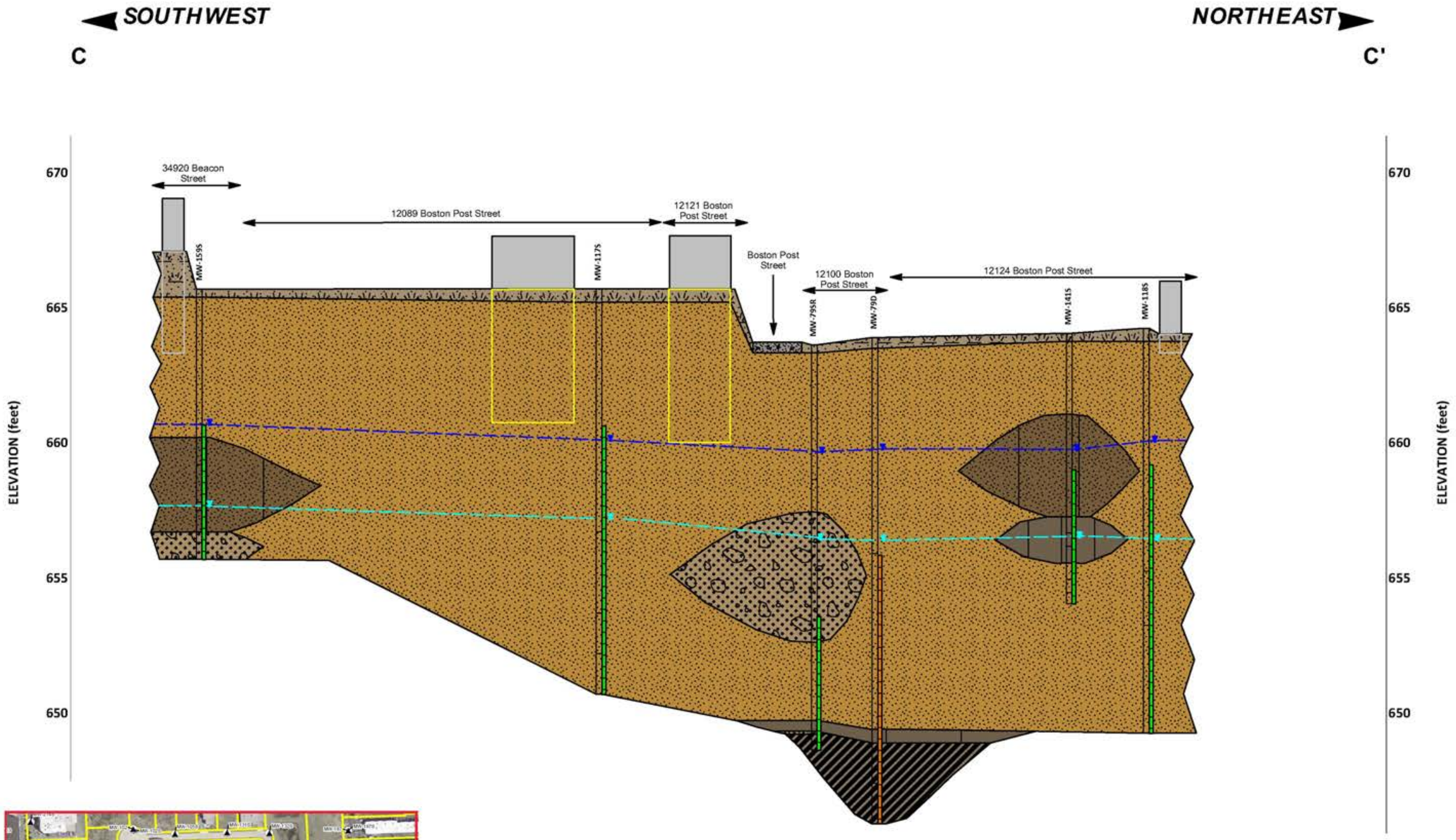
Recommendations

- No mitigation unless GW and SS data exceed criteria
- Continue GW sampling (MW-118S, MW-141S, and MW-79SR)



12124 Boston Post – Distance to Surrounding Wells





LEGEND

Topsoil
Silt
Silty Sand
Sand
Gravelly Sand
Clay
Concrete

NOTES:
1. Groundwater analytical data flagging is based on data collected during fourth quarter 2021.
2. Groundwater elevations are based on depth to water gauging data collected through fourth quarter 2021 and are calculated using monitoring well top of casing elevations.
3. Ground surface elevations and depth of structure elevations are based on survey data where collected. Estimates used at 12121 Boston Post Street due to access restrictions.
4. All geologic extrapolations shown in the cross-section are based on assumptions from the boring logs collected.
5. Residence extents not represented to scale.

Groundwater sample does not exceed residential Drinking Water (DW) criteria
Groundwater sample exceeds residential Drinking Water (DW) criteria

Soil Boring
Highest Measured Water Level
Soil Boring Lithology
Screened Interval
Lowest Measured Water Level

Approximate Geologic Contact
Approximate Highest Water Table
Approximate Lowest Water Table
Crawl Space or Slab on Grade
Basement
Property Boundary Extent

Vertical Scale (Feet) 4
Horizontal Scale (Feet) 52
Vertical Exaggeration: 12.5x

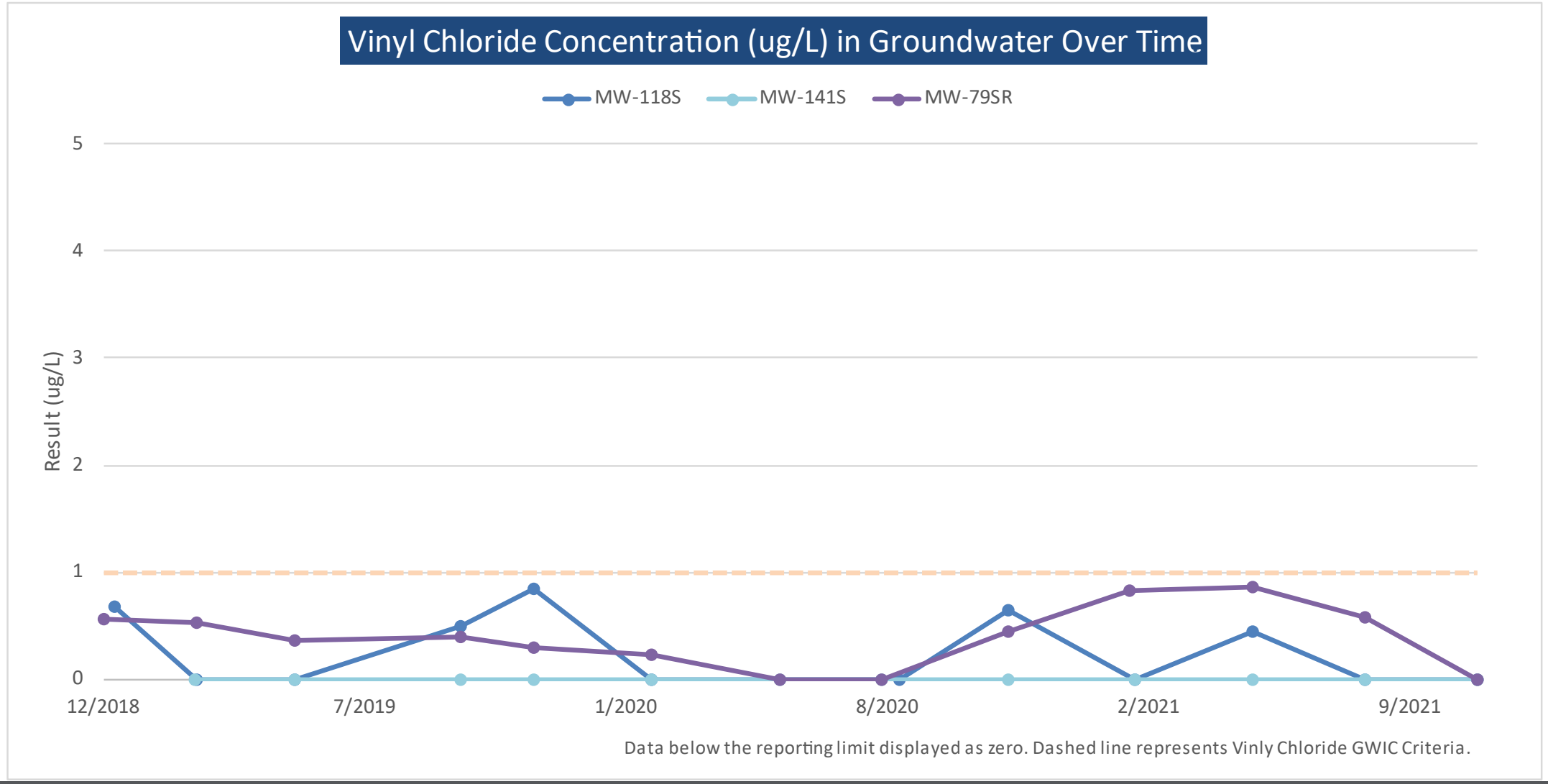
Ford Livonia Automatic Transmissions Plant
Livonia, MI

Ford LTP Cross Section C-C'

ARCADIS

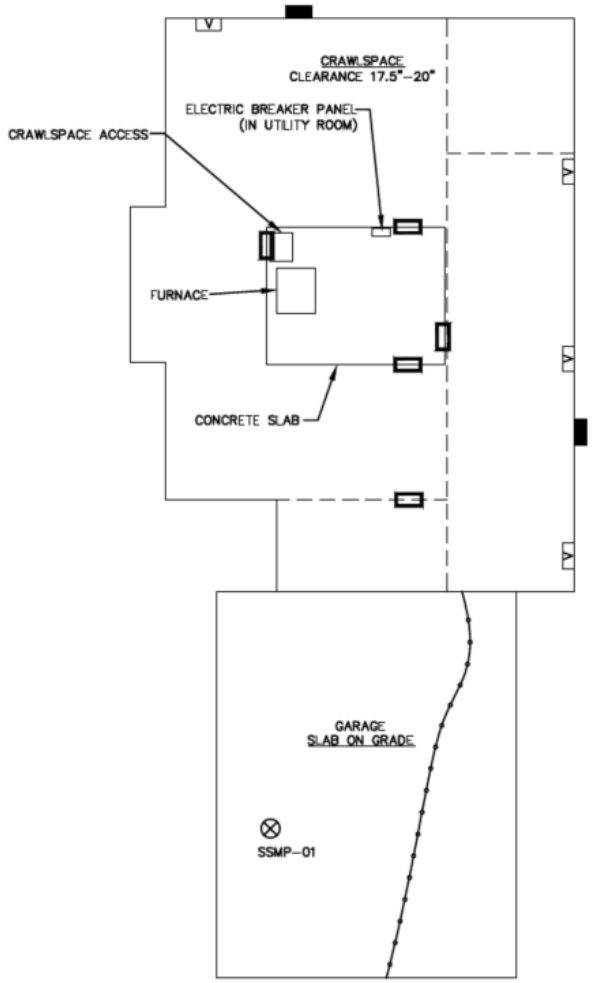
FIGURE A-1

12124 Boston Post



12 to 13 Sampling Events with No Exceedances of VC Criteria

12124 Boston Post

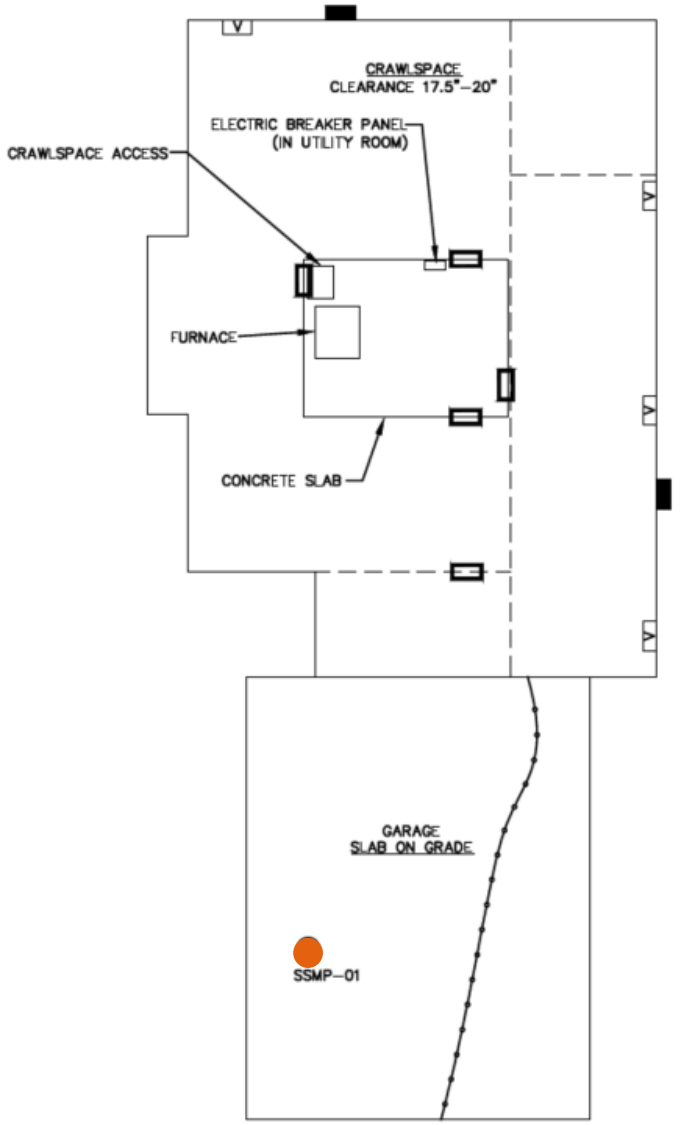


Sample Location	Sample Date	Sample ID	Sampling Objective	Vinyl chloride µg/m³
Crawl Space Indoor Air (IACS)	10/19/2018	IACS-03	Pre Mitigation	< 0.51
Main Floor Indoor Air (IAF)	10/19/2018	IAF-02		< 0.44
	4/17/2019	IAF-02		< 0.44
	8/7/2019	IAF-02		< 0.47
Garage Indoor Air (IAG)	3/1/2019	IAG-01		< 0.38
	4/17/2019	IAG-01		< 0.47
		DUP-01		< 0.40
Sub-Slab Vapor (SSMP)	10/19/2018	SSMP-01	Pre Mitigation	< 2.8
	2/27/2019	SSMP-01		< 2.9
	4/17/2019	SSMP-01		< 3.3
	8/7/2019	SSMP-01		< 3.4

No Mitigation – 4 Rounds on ND in Sub-Slab

Summary of Recommendations

- No mitigation of crawlspace
- No mitigation of attached garage
- Continue quarterly GW sampling
  - If GW concentration MW-118S, MW-141S, or MW-79SR is greater than criteria → SS sample quarterly at SSMP-01 until GW decreasing
  - If sample at SSMP-01 exceeds residential sub-slab VIAC → Mitigate crawlspace and attached garage



Summary

- 8 Properties with GW below criteria
  - Discontinue Mitigation
  - Monitor GW

- 1 Property with upgradient GW above criteria
  - Discontinue Mitigation
  - 2 Quarters of Sub-Slab and Sub-Membrane Rebound Monitoring
  - Monitor GW

- 2 Unmitigated property with GW below criteria
  - Monitor GW
  - 4 Quarters of SS sampling at 12121 Boston Post