Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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xxxxx

AVX Corporation
ATTN: Mr. Evan Slavitt
801 17th Avenue South, P.O. Box 867
Myrtle Beach, SC 29578

RE: **NEW BEDFORD**-BWSC
Release Tracking Number: 4-0000601
Former Aerovox Facility
740 Belleville Avenue
DRAFT CONDITIONAL APPROVAL/NOTICE OF DEFICIENCY/PARTIAL DENIAL/INTERIM DEADLINE - PHASE III REMEDIAL ACTION PLAN/INTERIM DEADLINE

Dear Mr. Slavitt:

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The Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup (MassDEP or the Department) is tasked with ensuring the cleanup of oil and hazardous material releases pursuant to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L., c. 21E). The law is implemented through regulations known as the Massachusetts Contingency Plan (310 CMR 40.0000 et seq. – the MCP). Both M.G.L., c. 21E and the MCP require the performance of response actions to provide for the protection of harm to health, safety, public welfare and the environment which may result from releases and/or threats of releases of oil and/or hazardous material at disposal sites.

Through the MCP, MassDEP is currently regulating a release of oil and/or hazardous material that has occurred at the former Aerovox property located at 740 Belleville Avenue, New Bedford, Massachusetts (the Property). The term "Site," as defined in the Administrative Consent Order (ACO-SE-09-3P-016 or the ACO) executed on June 3, 2010, means any place or area where a release of oil and/or hazardous material at or from the property at 740 Bellevue Avenue has come to be located, except for any such places or areas that are part of the New Bedford Harbor Superfund Site but inclusive of the sheet pile wall that was previously installed at the Property. MassDEP has assigned Release Tracking Number (RTN) 4-0000601 to the Site. AVX Corporation (AVX) has been identified as a Potentially Responsible Party (PRP) for the Site and is conducting response actions pursuant to M.G.L., c. 21E, the MCP, and the ACO.

The ACO, which was signed by MassDEP, the Massachusetts Attorney General's Office and AVX, establishes deadlines for the completion of the Comprehensive Response Actions. The initial deadline established in the ACO for the submittal of a Tier Classification submittal and a Phase II Comprehensive Site Assessment Scope of Work was established to be 90 days upon AVX achieving completion of the Environmental Protection Agency's (EPA's) Non-Time Critical Removal Action (NTCRA). Pursuant to the ACO, deadlines for completion of the

subsequent Comprehensive Response Actions are dependent on AVX's receipt of MassDEP's written approval of each prior submittal. Herewith, MassDEP provides its written determination regarding the Phase III Remedial Action Plan Report (Phase III Report) that was submitted by Brown & Caldwell on AVX's behalf, on August 22, 2016.

PHASE III REMEDIAL ACTION PLAN REPORT REVIEW

The performance standards for a Phase III Remedial Action Plan, established at 310 CMR 40.0850 *et seq.*, are designed to result in the selection of a remedial action alternative which is a likely Permanent Solution, except where it is demonstrated that a Permanent Solution is not feasible or that the implementation of a Temporary Solution would be more cost-effective and timely. The regulations at 310 CMR 40.0853 require that the Phase III evaluation results in the identification and detailed evaluation of remedial action alternatives which are reasonably likely to achieve a level of No Significant Risk considering the oil and hazardous material present, media contaminated, and site characteristics; and the recommendation of a remedial action alternative that is a Permanent or Temporary Solution, where a Permanent Solution includes measure that reduce, to the extent feasible, the concentrations of oil and hazardous material in the environment to levels that achieve or approach background.

Pursuant to 310 CMR 40.0853(2), the Phase III Remedial Action Plan "shall describe and document the information, reasoning and results used to identify and evaluate remedial action alternatives in sufficient detail to support the selection of the proposed remedial action alternative." Evaluation criteria for the screening of alternatives are specified in 310 CMR 40.0858, and include comparative effectiveness (???); comparative short-term and long-term reliability (???); comparative difficulty in implementing (???); comparative costs (???); comparative risks (???); comparative benefits (???); comparative timeliness (???); and the relative effect of the alternatives on non-pecuniary interests (???).

The Phase III Report, information from the Immediate Response Action Status Reports, and information provided in a letter to MassDEP on August 22, 2016 were reviewed to evaluate whether or to what extent the Phase III performance standards were met in the Phase III Report. MassDEP recognizes that it is difficult to identify and evaluate remedial action alternatives in a complex bedrock aquifer system consisting of PCBs, TCE, DNAPL, and vapor intrusion issues in a shoreline area where tidal fluctuations in groundwater occur twice daily. This letter provides MassDEP's written determination, pursuant to the terms of the 2010 ACO (paragraph 14) and the requirements of 310 CMR 40.0850 *et seq.*, for the Phase III Report.

The following table presents a summary of: (1) each Operable Unit (OU); (2) locus of each OU; (3) the Remedial Action Alternatives recommended by Brown & Caldwell on behalf of AVX for each OU; and, (4) MassDEP's written determination regarding each of the recommended alternatives:

Operable Unit	**Portion of Disposal Site**	**Recommended Remedial Alternative**	**MassDEP Determination**
OU1-1	Titleist property, southerly abutter to former Aerovox property, surficial soils containing PCBs	Soil excavation, soil cap, AUL	**Conditional? Approval**
OU2-1	Precix property, northerly abutter, vapor intrusion pathway due to TCE in sub slab soil gas	AUL and MNA	**Conditional? Approval**
OU3A-3	Aerovox property - overburden soil	Asphalt cap over soil with PCBs > 2 mg/kg; Engineered barrier over soil	**Notice of Deficiency**

		with PCBs > UCLs	
OU3B-4	Aerovox property – overburden groundwater	Vertical barrier wall, permeable reactive barrier, in-situ treatment of soil hot spots	**Notice of Deficiency and Partial Denial**
OU4-1	Aerovox property – bedrock groundwater	ISCO (sodium permanganate for TCE and alkaline persulfate for PCBs and TCE) of hot spots and MNA	**Notice of Deficiency**

According to the Phase III Report, several of the alternatives considered for each OU and all of the recommended alternatives are expected to achieve of a Permanent Solution. MassDEP acknowledges and appreciates AVX's commitment to achieving a Permanent Solution for all individual OUs and the Site as a whole. Below are detailed comments regarding MassDEP's review and this Conditional Approval/Notice of Deficiency/Partial Denial of the Phase III Report.

Overall General/Technical Comments

Phase II Deficiencies:

1. Several deficiencies were noted in the Conditional Approval letter for the Phase II Comprehensive Site Assessment Report (Phase II Conditional Approval) issued by MassDEP to AVX on March 11, 2016. AVX responded to the deficiencies in a letter received by MassDEP on August 22, 2016. However, the Phase II Conditional Approval required that the listed deficiencies be considered when identifying, evaluating and selecting the Comprehensive Response Actions as part of the subsequent Phase III process. If the deficiencies could be addressed using existing data, then that information was required to be documented in the Phase III Remedial Action Plan. The public record regarding site investigations and consideration of remedial alternatives must be complete from phased submittal to phased submittal. The Phase II Conditional Approval was issued contingent upon AVX addressing the identified deficiencies, several of which remain outstanding. MassDEP provides the following comments on AVX's August 22, 2016 letter, utilizing the corresponding numbering convention:

    a. While MassDEP acknowledges that there are two sources of historic flooding (drainage to the Site and high tide/weather effects from the Acushnet River), and that AVX has partially addressed drainage issues, three mechanisms still have not been addressed: (1) On-site flooding from high water from the Acushnet River watershed up stream, inundating the site with some velocity and potential for erosion; (2) Coastal flooding and subsequent forcing of floodwaters from New Bedford Harbor onto the Site from significant storm events that coincide with astronomical high tides; and (3) Overland flow from a heavy rain event. Although the New Bedford Harbor Superfund Site is not part of the former Aerovox disposal site, MassDEP does not agree that flooding to the former Aerovox Site from the Acushnet River/New Bedford Harbor is outside the scope of the MCP disposal site evaluation. Flooding and other storm related events are crucial in determining an appropriate remedial option for the former Aerovox Site, which is situated along the Acushnet River and has most recently been affected by King tides and storm surges.

    b. AVX has indicated that DNAPL is present in a mid to late stage plume in various IRA Status reports and in its Phase II Report. However, AVX has not definitively linked the presence of a late stage plume to any conclusion regarding whether the DNAPL is migrating to the

river, and whether it will migrate in response to the planned New Bedford Harbor dredging. MassDEP does not agree with AVX's contention that source control on the former Aerovox Site is "contingent upon" EPA's source removal in the river as part of the New Bedford Harbor Superfund cleanup. As discussed in greater detail below, 310 CMR 40.0858(3) specifically requires that integration of remedial action alternatives with [not only] existing facility operations but also with "other current of potential remedial actions" be considered in the Phase III evaluation.

c. MassDEP acknowledges that this information has been provided in IRA Status Report #4, plans by EPA and others after the sheet pile wall was installed, and required annual cap inspection reports under the EPA Action Memorandum and TSCA determination. However, in order to satisfy the requirements of the Phase II Conditional Approval and to provide the public a complete record, this information must be included in a Phase III Modification that is anticipated to be submitted by AVX in response to MassDEP's written determination regarding the Phase III Report.

d. MassDEP acknowledges that this information was provided in the Phase III Report.

e. MassDEP acknowledges that the subject of bedrock groundwater, including deep bedrock groundwater, has been addressed in the Phase III Report. However, additional data from the installation of the new recovery wells in the vicinity of MW-15 will significantly improve the delineation of shallow bedrock. Information from the installation of these new wells was not included in the Phase III Report and must be included in a Phase III Modification that is anticipated to be submitted by AVX.

f. MassDEP acknowledges that the information provided in IRA Status reports 6 and 7 appear to have addressed the presence of contamination that has migrated northward to the former Coyne laundry property, a data gap that was identified in the Phase II. However, this information must be included in the Phase III Modification that is anticipated to be submitted by AVX.

<u>Mass Flux Calculations:</u>

1. It is MassDEP's opinion that Mass Flux calculations presented in the Phase III Report may not be an accurate representation of Site conditions, which could inappropriately skew the evaluation of the remedial options, based on the following evidence:

    a. Fracture flow in bedrock and the assumption of non contamination in areas without fractures may not accurately estimate the concentrations in the river bottom, and may be greater than assumed in certain areas.

    b. The northern edge of the deep bedrock plume is assumed to be the northern Site boundary. However, the northernmost deep bedrock well (MW-34B) has extremely high average concentrations (up to almost 500,000 µg/L) in the deep bedrock. There are no wells screened below 40 feet amsl to the north, so the northern extent of the plume is unknown. The extent of the northern boundary of the plume obviously must be determined in order to conduct a complete evaluation of remedial alternatives to address the plume. Moreover, an extension of the bedrock plume to the north would impact the

mass flux into the river, and correspondingly could have ramifications for final treatment system design.

c. The available deep bedrock water level data is extremely limited. Additional bedrock wells or other measurement options (developing piezometric contours and gradients) would provide more accurate mass flux calculations, which, as mentioned, could affect the final treatment alternative/design option.

d. The bulk hydraulic conductivity of the deep bedrock is likely lower than the bulk hydraulic conductivity of the shallow bedrock, because it has fewer water-bearing fractures. Therefore, using the shallow bedrock hydraulic conductivity value for deep bedrock is conservative as stated in the Phase III Report. However, in the Phase III Report AVX has already limited the bedrock contaminant mass to few zones within the deep bedrock. Therefore, the ultimate mass flux calculated is not excessively conservative, as stated in the report.

e. The northern section of the deep bedrock plume is assumed to be the thickness (height) of the 10-foot well screen in MW-34B below 160 feet (assuming this is in feet MSL) and the southern section of the deep bedrock plume is assumed to be the thickness of the 20-foot well screen in MW-32B below 125 feet. Most of the deep bedrock contamination would be expected to be within the fractures and nearby rock matrix, and therefore, the zones with groundwater flow are most likely to contain the bulk of the contamination, as described in the Phase III Report. However, given the limited number of deep bedrock wells installed, and the irregular nature of the fractures, a larger contaminated deep bedrock thickness should be used to estimate the mass flux in deep bedrock, such as double the height of the screened zones (20 feet in the northern section and 40 feet in the southern section).

f. The uppermost bedrock has not been evaluated in detail because it is generally drilled using a roller bit to install a rock socket. Dense non-aqueous phase liquid (DNAPL) has been detected in both MW-15D and MW-15B, and since no evidence has been provided that shows the interval between the two is free of contamination, the top of the shallow bedrock plume should be the top of bedrock for both the northern and southern sections. This would impact the mass flux and derived calculations.

g. The Phase III Report does not include mass flux calculations for the overburden groundwater. While the sheet pile wall does limit and/or contain the groundwater in the overburden, there is acknowledged mass flux in deep overburden under the current sheet pile wall (below the peat layer), due to (at a minimum), concentrations in MW-15D. Overburden mass flux calculations based on plume configuration, similar to the bedrock evaluation, would be useful to help develop/evaluate groundwater overburden alternatives.

h. According to the Phase III Report, mass flux calculations were not provided for PCBs because, "[a]lthough PCBs have been detected above UCLs in one bedrock well (MW-15B), PCBs have much lower mobility and therefore were not considered a driver for the mass flux calculations." However, it is well known that PCBs co-located with TCE are more mobile than PCBs by themselves. In addition, the Phase III Report compares the calculated

TCE pore water concentration to the Method 1 GW-3 Standard for TCE (5,000 µg/L), which is much higher than the Method 1 GW-3 standard for PCBs (10 µg/L). This information was used in the Phase III Report to conclude that active bedrock remediation of PCBs is not necessary. However, the National Recommended Water Quality Criteria for PCBs for protection of aquatic life is 0.03 µg/L. TCE and PCBs vary widely in chemistry, fate and transport. Therefore, PCB mass flux calculations are critical to understanding the potential continuing impact that PCBs from the former Aerovox Site may have on the Acushnet River, and should be completed in order to satisfy the applicable performance standards.

Groundwater Modeling (Appendix C of Phase III Report):

1. The boundary conditions include a single recharge boundary applied over the uppermost model layer, with a recharge value of 10 inches per year. However, a significant portion of the domain area is paved or under building cover, including the former Aerovox facility. The recharge should be adjusted to account for expected urbanization effects.

2. The groundwater model was developed to support the recommended remedial alternative, which, according to the Phase III Report, is a permeable reactive barrier (PRB) for overburden groundwater. However, hydraulic conductivity values were calculated using slug tests on three monitoring wells. The chosen PRB alternative runs parallel to the shoreline, where up to 11 monitoring wells are located. Given that the groundwater is sensitive to changes in the hydraulic conductivity, the available slug test data is not representative of Site-specific hydraulic conductivity in the area where the PRB would be located.

3. It is not sufficiently explained whether the excavation of UV-17, BGP-20, and MIP-23 have changed, or will change, the modeled groundwater flow regime in this area.

Identification, Evaluation, and Scoring of Remedial Alternatives

1. There is insufficient development and analyses of the on-Site consolidation options under OU1 and OU3. Section 4.1.1.5 of the Phase III Report mentions soil excavation and on-site consolidation, but this option was not carried through for further evaluation in Sections 4.2.1 and 4.2.3.

2. Three alternatives for remediation are discussed under OU3A; however, OU1, OU2, and OU3B consider and discuss four remedial alternatives. Evaluation of a fourth alternative under OU3A, particularly soil excavation and on -site consolidation (which is raised early in the Phase III evaluation but dropped without explanation), is a reasonable expectation.

3. For Alternatives OU3A-1 and OU3A-2, it is not clear what portion of the proposed excavation of 26,000 cubic yards includes PCBs greater than 100 ppm. This information will aide in developing estimated costs.

4. Numerical tables were not provided to support the calculations of soil volumes and estimated remediation costs. This information is critical to evaluating feasibility of remedial options.

5. Scoring of the remedial alternatives does not sufficiently consider long-term environmental protection and safety.

6. Tables 5-1 through 5-4 in the Phase III Report provide some detail regarding the scoring; however, the factors affecting each individual rating and any weighting of factors should be included, to facilitate an understanding how scoring was calculated.

Other

1. It is unclear whether some references to depth in the Phase III Report are as feet below the ground surface (bgs) or feet above mean sea level (amsl).

2. ???

Operable Units

Operable Unit 1 (OU1) – Titleist: **CONDITIONALLY APPROVED**

1. MassDEP understands that for the recommended alternative to succeed, the owner of this property would have to agree to provide access and to the filing of an Activity and Use Limitation (AUL).

2. A construction monitoring plan that addresses releases caused by construction near the shoreline should be completed, and the costs should be added to the costs already identified for this recommended alternative.

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Operable Unit 2 (OU2) – Precix property: **CONDITIONALLY APPROVED**

1. The recommended remedial alternative for this area is Monitored Natural Attenuation (MNA) and the implementation of an AUL. A complete vapor intrusion pathway was identified but no significant risk or substantial hazard exists. MassDEP understands that for the recommended alternative to succeed, the owner of this property would have to agree to provide access and to the filing of an AUL.

Operable Unit 3A (OU3A) – Aerovox soils**: NOTICE OF DEFICIENCY**

1. As noted in the Interim IRA Status report dated December 2, 2016, the NAPL in the vicinity of UV-17 and BGP-20 has been removed via excavation to just below the peat layer. The soil above the peat in MIP-23 has also been excavated. It is unclear whether the IRA excavation has changed the estimated extent of contamination that is being addressed under OU3A and whether this will affect the evaluation and scoring of remedial alternatives.

2. The following cost discrepancies were identified between Appendix D of the Phase III Report and Section 5.3.1.4 (the text matches Table 5.3):
    a. OU3A-1: Appendix D capital = $19.4 million (M), elsewhere capital = $22.7 M
    b. OU3A-1: Appendix D estimated total net worth = $20.6 M, elsewhere total net worth = $23.1 M
    c. OU3A-2: Appendix D capital = $17.6 M, elsewhere capital = $26.3 M
    d. OU3A-2: Appendix D estimated total net worth = $18.8 M, elsewhere total net worth =

$26.7 M

e. OU3A-3: Appendix D capital = $2.0 M, elsewhere capital = $2.5 M
f. OU3A-3: Appendix D estimated total net worth = $3.2 M, elsewhere total net worth = $2.9 M

3. Options OU3A-1 and OU3A-2 do not contain the estimated volume of PCB concentrations that exceed 100 ppm.

4. There was insufficient development and analysis of the on-Site consolidation options under OU1 and OU3. While Section 4.1.1.5 of the Phase III Report does mention soil excavation and on-Site consolidation, as does Table 4.1 (page 2), the evaluation was not carried through in Sections 4.2.1 and 4.2.3. This deficiency should be addressed.

5. Long-term sustainability of the proposed entombment of contaminated soils near the shoreline was not addressed in detail. Storm events, flooding, tidal fluctuations, among other issues, can degrade the area where entombment is proposed. Short-term risks and long-term risks should be evaluated with respect to this alternative.

6. Numerical tables were not provided to support the calculations of soil volumes and estimated remediation costs. This information is critical in evaluating feasibility of remedial alternatives.

7. The ratings in Section 5.3.1.1 of the Phase III Report at page 5-8, appears to more heavily weigh short-term risks during construction and diminishes risks posed by leaving soils above UCLs at the Site. Leaving material above UCLs in place would present a higher long-term risk than the alternative to remove the soil. Therefore, the rating appears better suited to be "fair" and not "good".

8. The ratings in Section 5.3.1.8 of the Phase III Report at page 5-8 indicate a "very good" rating for non-pecuniary factors. However, the recommended alternative leaves the most contamination in place. This scenario is the least desirable scenario for the City of New Bedford and should receive the lowest community acceptance rating; while the other two alternatives should have higher ratings for this criterion. That is, a lower value below the other alternatives would be more appropriate for the recommended alternative.

9. A construction monitoring plan that addresses releases caused by construction near the shoreline should be completed and the costs should be added to the costs already identified for this recommended alternative.

Operable Unit 3B (OU3B) – Aerovox shallow and deep overburden groundwater: **NOTICE OF DEFICIENCY AND PARTIAL DENIAL of the recommendation to include PRB technology in the selected remedial alternative**

1. The following cost discrepancies were identified between Appendix D of the Phase III Report and Section 5.3.2.4 (the text matches Table 5.3):

   a. OU3B-2: Appendix D estimated total net worth = $20.0 M, elsewhere total net worth = $13.9 M
   b. OU3B-3: Appendix D estimated total net worth = $15.4 M, elsewhere total net worth =

$11.8 M

2. The recommended alternative would include installation of a PRB in an area that is a known DNAPL source area, highly contaminated with PCBs and CVOCs, where "a strong interconnection exists between the shallow overburden, deep overburden and shallow bedrock aquifers, and between groundwater and surface water of the Acushnet River." (Phase III Report at p. 2-5). While MassDEP has determined that the complexities related to the proximity of the shoreline and the tidal fluctuations have not been sufficiently evaluated to date, and the Phase III Report specifically does not adequately evaluate ethe effectiveness, the reliability, or the implementability of the recommended alternative, AVX has identified several other reasonable remedial alternatives to address OU3B. Two of these other alternatives (OU3B-2 and OU3B-3) involve technologies with a track record of effectiveness at sites with similar conditions and contaminants. MassDEP provides the following additional comments highlighting the problems with the recommended PRB alternative for OU3B:
    a. Groundwater in the area of the proposed PRB is contaminated with both PCBs and CVOCs. The proposed PRB does not address PCB contamination. In addition, the lack of mass flux calculations for PCBs together with the groundwater modeling concerns in this area do not allow for the conclusion that PCBs in groundwater do not need to be controlled.
    b. The effects of a PRB on the New Bedford Harbor cleanup efforts are not evaluated, although they are required to be considered in accordance with 310 CMR 40.0858(3). A PRB is a complex system that is difficult to optimize/fix once it is installed. If NAPL flows through the PRB, the PRB's effectiveness will be decreased. Minimal information is presented in the Phase III Report to adequately evaluate its effectiveness. Moreover, there is very little to no information demonstrating the use of a PRB in a salt water environment with PCBs and contamination present on both sides of the proposed PRB wall.
    c. As mentioned previously in this letter, a significant data gap exists for the uppermost bedrock due to the method of drilling utilized. It is unknown if DNAPL is present in this subsurface layer. This data gap further demonstrates that a PRB is not an appropriate option for OU3B. In addition, PRB is not a good option generally for DNAPL.
    d. Redirecting groundwater via a funnel and gate system is likely not going to be as effective as a longer PRB. While the groundwater modeling provided to date suggests that 99% of the water in the contained area is glacial outwash and would pass through the PRB, the deficiencies of the groundwater modeling further put into question the reasonable effectiveness of a PRB.
    e. The recommended remedial alternative does not appear to include costs for replacing/regenerating PRB material within a reasonable timeframe, with justification for the selected replacement rate, especially where part of the purpose is to adsorb (i.e. not necessarily degrade) PCBs.
    f. It is unclear whether the method of installing the PRB would match the contours of the top of bedrock to ensure that a good seal is present along the top of the bedrock. Because the deep overburden conducts the highest concentrations of DNAPL, the remedy should include provision to prevent a gap in the barrier at the bottom.
    g. Given that the PRB is likely not an appropriate technology for PCB remediation, combined with what is known to date regarding the tidal influences and subsurface complexities, concluding that there is a "high likelihood" of achieving a Permanent Solution is simply not reasonable or supported for the recommended alternative.

MassDEP's review of the Phase III Report, combined with analysis provided by its consultant Nobis (including a review of the research to date regarding PRB technology) does not support its effective use as a component of the OU3B remediation strategy. Too many threshold questions are still outstanding to support going forward with the recommended PRB alternative OU3B-4, especially where AVX has identified at least two other feasible alternatives for reaching a Permanent Solution at the Site. In light of all of this persuasive evidence, MassDEP must reasonably conclude that inclusion of a PRB in the recommended alternative OU3B-4 does not and likely cannot (even with further investigation, including bench or pilot scale studies) meet the applicable performance standards. Therefore, MassDEP DENIES inclusion of PRB technology as a component of AVX's ultimately selected remedy for OU3B. Groundwater modeling concerns must still be addressed in response to comments provided earlier in this letter.

3. Enhanced reductive dechlorination is not guaranteed to eliminate all of the DNAPL in the overburden groundwater, and likely not within the proposed ten year timeframe. In addition, PCBs are not necessarily reliably remediated using ERD. Laboratory studies with site media should be evaluated for effectiveness.

4. In Section 4.1.2.1 of the Phase III Report, containment was retained as an alternative for groundwater. However, the OU4 bedrock groundwater alternatives presented in the summary of remedial alternatives did not advance the evaluation of containment in any of the alternatives for bedrock groundwater.

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Operable Unit 4 (OU4) – Aerovox Bedrock Groundwater**: NOTICE OF DEFICIENCY**

1. Bedrock groundwater hydraulic control/containment was discussed under Section 4.1.2.1 as a potentially good alternative for bedrock contamination in conjunction with other alternatives. However, this option was not further evaluated. This deficiency should be addressed.

2. The deep bedrock treatment area is identified as two hot spots, both located in the northern half of the property. Two shallow bedrock wells are located between these borings to the north (MW-6B and MW-28B) and one to the south (MW-27B). Two of these wells have average concentrations above 5,000 µg/L, and no wells are located between these wells to determine the extent of the hot spots to the east and west. Additional characterization work should be performed as part of the remedial design to determine the lateral extent of the identified hot spots in bedrock.

3. A containment option (such as groundwater extraction) should be retained as a bedrock alternative for comparison, even if it is ruled out at technically infeasible in Section 7. The hydraulic containment and ex-situ treatment alternative for groundwater shown on page 2 of the Phase III Report in Table 4.1 should be retained for OU4 deep bedrock. A groundwater extraction system targeting the known high-concentration deep bedrock fractures may not have the same problem with required high extraction rates compared to shallow bedrock, and my be comparable in feasibility to other treatment methods.

EPA Dredging and DNAPL migration

1. There is no discussion as to the effect of EPA's planned New Bedford Harbor dredging on the proposed alternatives, particularly for OU3 and OU4. As mentioned above, such consideration

must be included in any Phase III evaluation in order to meet the performance standards. The remedial alternatives presented in the Phase III Report should discuss whether the EPA dredging will affect the individual remedial alternative's effectiveness. The New Bedford Harbor dredging project must be discussed relative to the selected remedial alternative, to ensure that the selected alternative will not compromise the dredging and that the dredging will not compromise the selected remedial alternative or cause an exacerbation of contamination.

2. DNAPL was not addressed in the Phase III Report. While it is known that DNAPL areas were excavated at MIP-23, UV-17, and BGP-20, the DNAPL in the area of MW-15 could not be addressed under the most recent IRA because it was not measured in the monitoring wells and recovery wells installed as part of the IRA. DNAPL is known to be present in this area, albeit in discontinuous blebs and pools. The effect of the New Bedford Harbor dredging and the presence of DNAPL must be addressed.

As described above, several data gaps in the Phase III evaluation have been identified. In addition, for the reasons described above, MassDEP has partially denied the recommended alternative for OU3B (use of PRB technology). Accordingly, MassDEP hereby requests the submittal of a Phase III Modification to MassDEP by **xxxxx.** The Phase III Modification must address the above mentioned conditions and/or deficiencies and further evaluate the remaining remedial alternatives that AVX has identified in the Phase III Report for OU3B. This date constitutes an enforceable Interim Deadline pursuant to 310 CMR 40.0167. Failure to comply with an Interim Deadline may result in enforcement actions by the MassDEP, including, but not limited to, the issuances of a Notice of Noncompliance, an Administrative Penalty, and/or Enforcement Orders, or, referral to the Massachusetts Attorney General's Office.

DRAFT

If you have any questions regarding this matter, please contact xxxxx. All future communications regarding this matter must reference Release Tracking Number 4-0000601.

Sincerely,

Gerard M.R. Martin
Deputy Regional Director
Bureau of Waste Site Cleanup