Known for excellence.
Built on trust.

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

249 Vanderbilt Avenue
Norwood, MA 02062
T: 781.278.3700
F: 781.278.5701
F: 781.278.5702
www.gza.com

July 17, 2019

Ms. Elizabeth Callahan
Director of Policy & Program Planning
Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup, 6th Floor
One Winter Street
Boston, Massachusetts 02108

Re: Proposed Revisions to the
Massachusetts Contingency Plan
April 2019 Public Comment Draft

Dear Ms. Callahan:

This letter presents comments prepared by GZA GeoEnvironmental, Inc. (GZA) concerning proposed amendments to the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). GZA commends MassDEP's efforts to update, clarify and, in some cases, streamline the MCP and acknowledges the Department's intensive and thoughtful approach toward revising the regulations. While GZA believes that many of the proposed changes will be beneficial to the timely, cost-effective, and environmentally responsible completion of response actions, GZA is concerned that some of the proposed changes will result in overly conservative cleanup approaches that may divert resources away from real environmental and public health concerns. For other changes, we believe there may be a more cost-effective way of achieving the intended positive goals. Our comments on these changes are summarized below by key topic.

MGP WASTE DEFINITION AND EVALUATION OF HOT SPOTS

The proposed addition of a specific definition for "Manufactured Gas Plant (MGP) Waste," in conjunction with the modification of the "Hot Spot" definition and revisions to the approach to developing Exposure Point Concentrations (EPCs), could result in extremely conservative cleanup approaches that would not offer commensurate benefits with respect to risk reduction or environmental restoration. Based on GZA's experience, MGP residuals are being appropriately assessed and remediated at Massachusetts sites under the current regulations at the overwhelming majority of sites where these materials are present. The addition of several waste-specific clauses to the MCP to address MGP residuals is not warranted in our opinion.

Furthermore, the new requirement to compare concentrations in waste materials to Upper Concentration Limits (UCLs) appears to directly contradict the original intent of the MCP and the guidance provided by MassDEP since 1993. The MCP clearly states that UCLs apply to soil and groundwater and MassDEP has not issued guidance conflicting with that approach since the promulgation of the 1993 regulations. Many sites have progressed through various phases of assessment and remediation toward either a Temporary or Permanent Solution based on the existing regulation and guidance; in some cases, redevelopment planning has been based on these evaluations. Sites which have not reached a Permanent Solution (a significant

percentage of MGP sites due to the unique challenges these materials pose) would now face a retroactive requirement to reevaluate these deposits under different rules. This could lead to extensive additional assessment costs and jeopardize beneficial redevelopment projects.

Based on GZA's experience, the net effect of these changes taken collectively would be to drive all sites at which there is contamination by MGP residuals to active remediation (excavation/disposal, in situ stabilization or an Engineered Barrier). While remediation of these types of deposits is often a prudent alternative, the current regulations allow for some flexibility based on the specific nature of the deposit, the average concentrations of constituents of concern (COC) relative to UCLs and the potential for exposure to the MGP residuals. In some cases, capping of these deposits in conjunction with an Activity and Use Limitation (AUL) that limits/controls potential disturbance of the material can effectively address the MCP requirements for achieving No Significant Risk (NSR) and source control. It is GZA's opinion that the current regulations adequately address these materials and provide for sufficiently conservative site closures, provided that the MGP residuals are appropriately characterized in terms of nature, extent and potential exposures. We believe that rather than revise the regulations, MassDEP could address the deficiencies noted in characterizing, what we believe are a limited number of MGP sites, by issuing guidance that emphasizes the proper approach to characterization and remediation under existing regulations.

At a minimum, GZA recommends that MassDEP address the confusion regarding the evaluation of UCLs for waste deposits. The language at 310 CMR 40.0996(3)(b) indicates that an arithmetic average can be used for the UCL comparison for a Hot Spot (which now includes waste deposits). However, 310 CMR 40.0926(13) references "a conservative estimate of the average concentration" for comparison to UCLs. This language could lead to a conservative interpretation of the concentration to be used for waste materials along the lines of the EPC language requiring the upper confidence limit (ucl) on the mean value approach. We recommend that 310 CMR 40.0926(13) explicitly reference 310 CMR 40.0996(3)(b) to clarify that an arithmetic average is appropriate for the comparison to UCLs within a waste deposit.

GZA also notes that the term "areas of waste disposal" that has been added to the Hot Spot definition should have some scale or size component. Without such perspective, the regulation revisions could lead one to address tiny pockets of waste material (for example, thin layers or small isolated pockets of hardened tar which are commonly associated with former MGPs) as individual little hot spots, with analytical data required for each little pocket or layer. The revisions need to allow for judgment on the part of the LSP regarding a reasonable approach to developing EPCs for such heterogeneous deposits.

TIER CLASSIFICATION EXTENSION CHANGES

GZA endorses the changes to the Tier Classification (TC) requirements, which generally simplify what had become a complex process after the 2014 amendments. However, we note that for sites in Temporary Solution (TS) where active remediation or monitoring is not being conducted and the TC has lapsed (which was acceptable under the previous regulations), there is some uncertainty regarding the path to compliance under the revisions, as no transition provisions are included. GZA recommends that this scenario be specifically addressed under 310 CMR 40.0560(7), consistent with the wording for 310 CMR 40.0560(7)(g) or (h) for TC after termination of Remedy Operation Status (ROS) or for response actions after a Permanent Solution Statement (PSS) has been submitted. We also recommend clarification regarding the mechanism for requesting an alternate schedule for submittal of the post-TS status reports that will serve to maintain a TC. Would this include a specific box on the BWSC108 form?

DERIVATION OF EPCS

The significant change in the way EPCs are to be calculated for soil that has been proposed in the draft regulation revision package will have substantial consequences at most sites that have not been closed with a Permanent Solution. The use of arithmetic mean values (with appropriate documentation and justification) has been the standard approach to developing EPCs for soil at MCP sites since the privatized program began in 1993. These evaluations have been the basis of remedial strategies directed at achieving a Permanent Solution for numerous sites presently in Temporary Solution (TS) status. This major shift in the EPC calculation process will have widespread consequences for many sites that are already far along in the MCP process. The 90th or 95th percentile ucl approach almost always results in a value higher than the arithmetic mean value and can even yield concentrations higher than the maximum value actually reported for the disposal site, depending upon the nature of the data set. This will result in overstated average concentrations and consequently higher risk estimates, with resultant conclusions that active remediation is required at sites which would represent a condition of No Significant Risk (NSR) under the current regulations.

It is GZA's opinion that the approach that is currently used frequently at MCP sites, which involves biased sampling focused on the areas of most significant COC impact and the use of arithmetic mean concentrations as EPCs, provides a sufficiently conservative estimate of the risks that receptors may experience, particularly in light of the conservative exposure assumptions used in the MCP risk characterizations. This risk characterization process already incorporates multiple layers of conservative assumptions, resulting in generally conservative conclusions. Introduction of yet another layer of conservatism does not appear to be appropriate. We also note that a ucl approach will be particularly difficult for certain data sets, including COCs with elevated reporting limits, small data sets, constituents detected at low frequencies, and for marginal COCs which cannot be eliminated from the risk characterization process (because they are present at concentrations exceeding background levels) but which do not contribute significantly to site risks.

GZA believes that a radical shift to a ucl approach will introduce substantial uncertainty for those sites which have been closed out over the last 26 years of the MCP program based on the current regulations. Additionally, the entire assessment process may need to be revisited for sites presently in TS and working toward permanent closure. The change in the EPC evaluation process could effectively require repetition of the Phase II Comprehensive Site Assessment process at these properties, which could be especially troublesome at sites that have undergone redevelopment based in part on previous risk evaluation conclusions.

With respect to EPCs for other media, GZA notes that the groundwater section (40.0926(7)) does not appear to account for groundwater EPCs under a Method 3 scenario for exposure pathways other than drinking water. We believe that the use of areal mean values in developing EPCs for these other pathways (e.g. groundwater exposures by construction or utility workers in trenches) should be acknowledged as an appropriate approach in many cases. For indoor air, GZA believes that the proposed approach (either a maximum value or a 95th percentile ucl on the mean) represents an overly conservative approach to developing EPCs. The use of an arithmetic mean value should be allowed with appropriate justification. We also question the use of the 95th percentile ucl versus the approach proposed for soil which allows for use of the 90th percentile.

ELIMINATION OF ROUNDING FOR IMMINENT HAZARD EVALUATIONS

The change to 310 CMR 40.0955(2) effectively rules out the established practice of rounding estimates of Imminent Hazard risk for comparison to Hazard Indices (HIs) and Excess Lifetime Cancer Risks (ELCRs) to one significant figure. Currently, a calculated ELCR of 1.1 would be considered equal to the criterion (for a significant group of compounds which MassDEP categorizes as having the "potential to cause serious effects") and would not constitute an IH. GZA believes that rounding to one significant digit is an appropriate method given the uncertainty inherent in risk estimates and the multiple layers of conservative assumptions that are incorporated into the risk assessment process. Under the proposed changes a calculated HI of 1.0 would represent an IH for the relevant group of compounds. In our opinion, this represents an overly conservative approach.

PFAS STANDARDS

GZA notes that the proposed GW-1 standard for the six designated per- and polyfluoroalkyl substances (PFAS) of 20 parts per trillion (ppt) would be among the lowest drinking water criteria in the world regulatory environment for this group of compounds. While we understand and appreciate the lack of reliable human toxicity information for this family of compounds and the Department's desire to establish a protective standard, we strongly recommend that the impacts of such a low standard on Massachusetts water suppliers and industries be considered. Note that despite reports of several biological effects associated with PFAS exposure, a direct causal relationship between PFAS exposure and critical health outcomes has not been defined. With this uncertainty, the substantial costs that would be incurred to address a 20 ppt groundwater standard and the limited resources available to address environmental impacts from MCP sites, we recommend that MassDEP reconsider the proposed standard.

We note that MassDEP reduced the reference dose (RfD) for several PFAS constituents by incorporating an uncertainty factor to account for effects on development and the immune system at low doses. In GZA's opinion, the USEPA had already applied sufficiently conservative and protective uncertainty factors in developing the current advisory levels and the addition of further vague uncertainty factors is not supported by available toxicity data. Based on GZA's review of the available epidemiological studies, it is unclear if immunotoxicity in humans represents a truly critical health effect or rather a transient, short-term effect. Moreover, the application of an additional uncertainty factor in this case is improper because it is not relevant (specific) to the endpoint or study chosen. If immunotoxicity is of concern, data from an immunotoxicity study should be utilized and compared to other endpoints. EPA did this comparison and chose developmental toxicity as the critical endpoint for perfluorooctanesulfonic acid (PFOS), one of the PFAS constituents for which MassDEP applied the additional uncertainty factor.

Based on GZA's experience at several sites, the proposed PFAS soil standard for GW-1 areas (200 ppt) is well below the practical quantitation limit for normal soil samples. Additionally, this value is well below the lower end of the range of background concentrations for total PFAS in shallow soils based on several recent studies. (See for example, "PFAS Background in Vermont Shallow Soils" by Zhu *et al*, February 2019). Without consideration of background conditions, properties where a release of PFAS has not occurred may be brought into the system and importing of soil for development purposes may become problematic. We recommend establishing the soil cleanup standard and Reportable Concentration at a level which can be consistently achieved by most laboratories and which is above expected background levels– likely an order of magnitude higher than the proposed value.

ENGINEERED BARRIER FINANCIAL ASSURANCE MECHANISMS

The proposed regulation revision at 310 CMR 40.0996(7)(c) (formerly 40.0996(5)) allows for alternate financial assurance mechanisms for Engineered Barriers (EBs) for state agencies and authorities. The alternate approach could consist of an agreement executed between MassDEP and the agency/authority that documents a maintenance commitment. We believe that this alternate arrangement should be expanded to other entities in certain circumstances in place of the rigorous approach outlined in 310 CMR 30.0996. Depending upon actual site conditions, the design details of the EB, and the nature of the PRP, the maintenance agreement could be adequate to address the intent of the EB financial assurance requirements. In GZA's opinion, EBs do not necessarily warrant surety bonds or insurance products to guarantee appropriate monitoring and maintenance.

AEPMM REVISIONS

The establishment of the Active Exposure Pathway Mitigation Measure (AEPMM) concept to allow for the achievement of Permanent Solutions at sites with the ongoing operation of sub-slab depressurization systems (SSDS) was an important and valuable addition to the MCP in 2014. However, the steady migration toward more extensive and onerous monitoring requirements for such systems has eroded some of the benefits of the AEPMM approach. GZA believes that the newly proposed requirement to continuously monitor vacuum levels at every soil gas extraction point that is part of an AEPMM is excessive and unnecessary in many cases. GZA is aware of many SSDSs that employ multiple extraction points (in some cases more than 10) connected to a single fan or blower. At some of these sites, the extraction points are spread across a wide area within large active industrial structures. The disruption and expense associated with retrofitting such SSDSs with continuous vacuum monitoring telemetry for each extraction point would be substantial. For these types of systems, GZA typically has extensive monitoring data relating vacuum at the blower/fan to values at the individual extraction points; these data generally indicate consistent and predictable relationships. Under these circumstances, monitoring of vacuums at the fan or blower provides adequate demonstration of the systems' effectiveness. Establishing this as a standard of care should remove the need for the proposed level of continuous monitoring at non-residential sites. If added assurance is needed it could be addressed by including a limited number of representative vacuum monitoring locations below the floor.

GZA notes that many AEPMMs are in place at commercial/industrial sites that remain in long-term Temporary Solution status. In many cases, regular (monthly or even more frequent) site visits are a component of the long-term operation, maintenance and monitoring (OMM) program. (Note that such sites frequently have other types of remediation systems operating.) For these types of sites, particularly, the proposed additional monitoring/telemetry requirements are excessive and unnecessary. While we acknowledge the benefit of continuous vacuum monitoring in certain situations (e.g. Permanent Solution sites with residential settings and significant potential vapor intrusion exposures), we recommend that this wording be revised to accommodate judgment and flexibility on the part of the LSP. One option would be to maintain the proposed wording for residential sites with Permanent Solution AEPMMs (continuous vacuum monitoring at each extraction point) with an option for establishment of an alternate approach (continuous monitoring at the fans/blowers, supplemented by a limited number of sub-slab points) at other sites with appropriate documentation provided by the LSP.

PUBLIC NOTICE

MassDEP is proposing a revision to the public notification regulations that would allow for email notifications for public notices upon written agreement from the intended recipient. The email notifications are a welcome change

from the mailing or had delivery of written notices (which generally require delivery receipts for verification); however, the details of this process need to be further refined. GZA also recommends correction of a long-standing discrepancy in the public notice provisions regarding the transmittal of property owner notices and data transmittals to MassDEP. Currently, 310 CMR40.1403(2)(c)(1) conflicts with 1403(10)(c). The addition of language such as "except as provided in 310 CMR 1403(10)c or elsewhere in 310 CMR 1400 *et seq*" to 310 CMR40.1403(2)(c)(1) would address this issue.

We commend the Department on the extensive effort that clearly went into the proposed regulation revisions and we appreciate the opportunity to provide comments on the changes.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Charles A. Lindberg, LSP
Senior Principal

Lawrence Feldman, LSP
Senior Principal

cc: GZA LSPs

J:\Branch\NORWOOD\CAL\General MCP regs\2018-19 Revisions\GZA Comments on MCP Revs 7-17-19.docx