



May 17, 2013

Elizabeth Callahan
Department of Environmental Protection
Bureau of Waste Site Cleanup
One Winter Street, 6th Floor
Boston, MA 02108

Subject: Public Hearing Draft – Proposed Amendments to the Massachusetts Contingency Plan, 310 CMR 40.0000

Dear Ms. Callahan:

Subsurface Environmental Solutions, LLC (SES) offers the following comments on the proposed reforms related to assessment and cleanup of Light Non-Aqueous Phase Liquid (LNAPL) contained in the referenced Public Comment Draft Amendments to the Massachusetts Contingency Plan (MCP).

Definitions

- The proposed definition for LNAPL is improved over the original MCP definition in that the word “continuous” has been removed. This is consistent with current conceptual LNAPL models, and recognizes that discontinuous LNAPL can be a source of dissolved phase and vapor phase migration.
- The second portion of the definition for LNAPL (regarding the presence of LNAPL in a monitoring well, excavation or surface depression) appears to be causing confusion among stakeholders. While the presence of LNAPL in a monitoring well is a positive metric for identifying LNAPL, it can be non-conservative (i.e. LNAPL can be present in soil at very high concentrations but not be present in a groundwater monitoring well). The inclusion of this second sentence may cause some practitioners to mistakenly assume that LNAPL is not present on a Site if it is not seen in monitoring wells.
- It is not clear that the new definition of LNAPL needs to suggest how LNAPL can be identified. However, if identification methods are desired, additional measures to identify LNAPL should also be noted. For example, LNAPL can be identified using any of the following methods:

- ✓ Ultraviolet Light Photography.
 - ✓ Laser Induced Fluorescence.
 - ✓ Comparing measured soil concentration to the soil saturation limit (C_{sat}).
 - ✓ Physical testing methods (solvent dilution/distillation methods).
 - ✓ Presence of sheen on water within soil cores or sheen discharging to surface water.
 - ✓ Visual identification in soil cores, or along the acrylic core liners commonly used with direct-push drilling methods.
- The inclusion of definitions for residual saturation and transmissivity are welcomed in that they move the MCP toward current LNAPL conceptual models. However, there do not seem to be many significant uses of these definitions within the body of the proposed regulations. Residual saturation could be used to conclusively categorize LNAPL as stable vs. non-stable. Transmissivity could be used as a remediation trigger and remediation endpoint as discussed in more detail later in this letter.
 - A definition for “Soil Saturation Limit”, (C_{sat}) should be included in the proposed regulations. C_{sat} is a logical and accepted method (Brost, 2000) for identifying the presence of LNAPL in soil. C_{sat} is essentially a “lower bound” number that can be used to delineate the envelope of an LNAPL release. SES notes that published C_{sat} values are approximately the same order of magnitude of current reportable concentrations and Method 1 cleanup standards. Consequently, C_{sat} is a more conservative metric than LNAPL presence in a monitoring well for identifying presence or absence of LNAPL in subsurface porous media. SES has also used C_{sat} at many sites to define the limit of LNAPL migration. The resulting “Disposal Site Boundary” is more accurate than using LNAPL thickness in a monitoring well, and results in a truer definition of the extent of migration.

Release Notification

- SES supports streamlining reporting provisions for the presence of LNAPL. The suggested revisions include notification (within 72 hours) based on measured thickness in a groundwater monitoring well equal to or greater than 1/8-inch. As illustrated by LSPA (2005), LNAPL thickness in groundwater monitoring wells is highly sensitive to fluctuating groundwater levels, and can completely disappear at times in some monitoring wells.

Therefore, more than one reporting conditions could exist based solely on seasonal groundwater level changes.

- Because LNAPL thickness has been shown to be an unreliable metric for LNAPL characterization, and because absence of LNAPL in a well does not mean LNAPL is not present (i.e. a false-negative), SES recommends that presence of LNAPL be considered a 120-notification unless there are site specific conditions that might suggest a high level of risk. These high level risk conditions might include proximity to occupied buildings or surface water bodies, or toxicity of the NAPL (for example PCE/TCE).

Phase I Requirements

- SES notes that the proposed Phase I report guidelines (specifically 40.0483(1)(e)(5)) require LNAPL thickness measurements as part of the characterization/reporting approach. SES understands that LNAPL thickness is a residual industry practice for LNAPL assessment. However, as discussed previously, LNAPL thickness is not considered a good metric for LNAPL characterization. Continuing to use this approach for Site characterization simply perpetuates use of a widely discredited assessment metric. In addition to providing little technical benefit, the LNAPL thickness approach can have a significant cost implication in terms of well materials, drilling time, and professional time. SES recommends that this language be deleted in favor of the straightforward language requiring delineation of the vertical and horizontal extent of LNAPL.

Upper Concentration Limits for NAPL

- SES applauds MassDEP for removing the “1/2-inch LNAPL” Upper Concentration Limit (UCL).
- SES recommends that consideration be given to eliminating all LNAPL related UCLs (i.e. the soil concentration based values for EPH and VPH carbon ranges).

LNAPL Site Closure

- SES recognizes the difficulty of creating an acceptable and implementable approach to LNAPL Site Closure. The proposed regulations are a major step in the right direction toward creating an LNAPL management approach based on established and emerging science.
- The proposed regulations do not make it clear what measurable metric or other criteria will be used to determine if LNAPL can be considered “stable”.

- SES recommends that a transmissivity based metric be established in the MCP to determine whether or not LNAPL should be considered stable. Work by ITRC (2009) refers to a “Hydraulic Recoverability Limit” (HRL) based on LNAPL transmissivity of between 0.1 to 0.8 ft²/day. SES understands that several other states and federal agencies (Minnesota, Wyoming, Texas and EPA Region 5) have begun to adopt this approach. In this approach the HRL becomes both a remediation trigger and a remediation endpoint. This “bright line” approach is necessary for LSPs to make clear and defensible decisions related to LNAPL remediation and Site closure.

Activity and Use Limitation for NAPL Sites

- SES interprets the proposed regulations to assume that an Activity and Use Limitation (AUL) will be required for all Sites where stable NAPL remains.
- SES believes that many “stable” NAPL Sites could be closed without an AUL. For example, Sites where depth to groundwater exceeds 15 feet and all NAPL is stable should not require an AUL. This would be consistent with the current MCP and consistent with regulations for all other contaminant types.

LNAPL Conceptual Site Model

- SES believes that a separate category of Conceptual Site Model (CSM) for LNAPL is not beneficial. It is not clear how this definition will be used by LSPs, and SES believes that standard CSM language sufficiently addresses LNAPL.

Presumption of LNAPL Recovery

- The proposed regulations appear to presume that LNAPL will be removed to the extent feasible. It is not clear that this language applies only to non-stable LNAPL.
- SES suggests that it should be clear that stable LNAPL does not need to be removed to the extent feasible (presumptively, stable LNAPL would not exhibit high recoverability).
- SES suggests that non-stable LNAPL should only be removed to the recommended Hydraulic Recoverability Limit unless other risk drivers or non-technical issues demand additional remedial efforts.



SES appreciates the opportunity to submit these comments to MassDEP regarding proposed MCP/LNAPL regulatory change.

Very truly yours,
Subsurface Environmental Solutions, LLC

A handwritten signature in blue ink, appearing to read 'S. Boynton', is written over a horizontal line.

Stephen S. Boynton, LSP
President



REFERENCES

Brost et. al. June 2000. *Non-Aqueous Phase Liquid (NAPL) Mobility Limits in Soil*, American Petroleum Institute, Soil & Groundwater Research Bulletin, No. 9.

LSPA, 2005. LNAPL and the MCP, Part 1. LSP Association.

ITRC, December 2009. *Evaluating LNAPL Remedial Technologies for Achieving Project Goals. LNAPL-2*. Washington, D.C.: Interstate Technology & Regulatory Council, LNAPLs Team.
www.itrcweb.org.