Aggressive Fluid Vapor Recovery

Facility or Tank ID: _____ Leak ID: _____

Do not proceed unless a site characterization has been completed that fully delineates the extent of contamination.

I. Applicability Determination (Initial Screening)	Effective	Somewhat Effective	Ineffective
1. Provide a general description of the **intrinsic permeability (k)*** of soils in the area of remediation measured in cm^2. ☐ Based on soil type ☐ Calculated ☐ Field/lab test *Stratified soils may require special consideration in design to ensure less-permeable stratum are addressed. This will require documentation.*	☐ $k \geq 1x10^{-8}$	☐ $1x10^{-8} \geq k \geq 1x10^{-11}$	☐ $k < 1x10^{-11}$
2. What is the general boiling point range in °C for chemicals subject to remediation at this site? *For complex mixtures, select the boiling point range that is most representative of the chemicals of concern to be remediated by using this remedy.*	☐ < 250	☐ ≥ 250 - ≤ 300	☐ ≥ 300
3. What is the depth to groundwater in feet based on the shallowest well in area where remediation is being performed? *If water-table elevation fluctuate significantly, special design provisions must be made to accommodate them.*	☐ > 10	☐ ≥ 3 - ≤ 10	☐ < 3
4. What is the moisture content (%) of soil in area of remediation?	☐ < 50	☐ ≥ 50 - ≤ 80	☐ > 85
5. What is the vapor pressure range in mm of the chemicals being remediated? *For complex mixtures, select the vapor pressure range that is most representative of the chemicals of concern to be remediated by using this remedy.*	☐ ≥ 1	☐ > 0.5 - < 1.0	☐ < 0.5
6. What is the Henry's law constant** (atm) for the chemicals being remediated? *For complex mixtures, select the Henry's law constant range that is most representative of the chemicals of concern to be remediated by using this remedy.*	☐ > 150	☐ ≥ 100 - < 150	☐ < 100
II. Aggressive Fluid Vapor Recovery System Design			
1. What is the radius of influence (ROI) in feet for the proposed extraction wells? *The wells must be identified by showing the ROI on a site diagram.*	☐ > 20	☐ > 5 - ≤ 20	☐ < 5
2. Has the radius of influence (ROI) been calculated for each soil type at the site? *For more complex sites with multiple treatment depth intervals and/or the need for multiple extraction wells, subsurface airflow modeling must be conducted to determine well placement.*	☐ YES		☐ NO
3. Is the proposed well density appropriate, given the total area to be cleaned up and the radius of each well?	☐ YES		☐ NO

** Intrinsic permeability is a measure of the ability of soils to transmit fluids and is the single most important factor in determining the effectiveness of AFVR.*

*** Here is a link to an EPA website with common Henry's Law Constant for various chemicals. Choose Hpx (partial pressure/mole fraction)*
https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/esthenry.html

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II. Aggressive Fluid Vapor Recovery System Design (continued)

4. Describe the system.
   ☐ Single pump system ☐ Dual pump system

   Identify and number the wells (on the site map) to be utilized for the AFVR.

5. What is the proposed extraction time period for each well? _____

6. How many extractions are planned? _____

7. What is the planned frequency of extractions?
   ☐ Once ☐ Weekly ☐ Monthly ☐ Quarterly for _____ quarters

   ☐ Other (specify): _____

III. Evaluation of Operation and Maintenance

What is the estimate of time the achieve cleanup of the site with the anticipated extraction flow rates?

_____ days

At a minimum, the following should be monitored and provided in CAP Monitoring report : flow measurements, vacuum readings, and vapor concentrations, carbon dioxide and oxygen concentrations.

Weekly monitoring of the system is recommended, but in no case should the monitoring of flow measurements, vacuum readings, and vapor concentrations, carbon dioxide and oxygen concentrations be less than every two weeks. This information should be provided in the CAP monitoring report.

List the monitoring and analytical parameters that are proposed for quarterly sampling as part of the CAP monitoring report.
Use the CAP Analytical Parameters Attachment

Example

Well Name	Substance(s)
MW - 1	BTEX, MTBE
MW - 3	BTEX, MTBE

IV. Sitemap

Attach a site map to this document

Site map(s) drawn to scale illustrating the following:

a. Location of all present and former tanks, piping and dispensers in area of release;
b. Footprint of surface and/or subsurface soil contamination;
c. Footprint of other structures (buildings, canopies, roads, utilities, etc..);
d. Location of treatment system;
e. Location of extraction wells;
f. Location of monitoring wells that will be used for sampling;
g. Groundwater flow direction;
h. North arrow, bar scale, and map legend