

**UNIVERSITY OF PORTSMOUTH
SCHOOL OF EARTH AND ENVIRONMENTAL SCIENCES
1GS312 Contaminated Land
1GS418 Fundamentals of Contaminated Land**

Workshop E: Conceptual Site Model Template

Task

For your allocated site complete the modified Conceptual Site Model and Site Summary template below.

Reference

State of Delaware, USA Conceptual Site Model and Site Summary Template

[www.awm.delaware.gov/BAC/Documents/Conceptual Site Model and Site Summary Template.doc](http://www.awm.delaware.gov/BAC/Documents/Conceptual_Site_Model_and_Site_Summary_Template.doc).

Conceptual Site Model and Site Summary for _____ Site

The purpose of the Conceptual Site Model and Site Summary (CSM-SS) document is to provide a single document where all the information about the site can easily be reviewed and used for decision making at any stage of the project. This format is all inclusive and not all sections are applicable to all sites. The CSM-SS is a dynamic document that is intended to be refined and updated as new information becomes available. At the initial stage of the development of this document, only information that is readily available and necessary for the Scoping Meeting for the investigation needs to be completed. The sections that need to be completed for the Scoping Meeting are shown in ***bold italics***.

1.0 Site Description

SECTIONS	DESCRIPTION	COMMENTS
<i>1.1 Site Location</i>		

<p><i>1.2 Site Description</i></p>		<p><i>(Acreage, Layout, current buildings, undeveloped areas, parking facilities/paved areas, etc)</i></p>
<p><i>1.3 Current Zoning and future zoning</i></p>		
<p><i>1.4 Existence of infrastructure</i></p>		<p><i>(i.e., sewer, water, roads etc.)</i></p>

3.0 Site Regulatory/Operational/Investigation History

SECTIONS	DESCRIPTION	COMMENTS
<i>3.1 Operational History and known or potential use of chemicals or hazardous substances</i>		
<i>3.2 Regulatory History</i>		
<i>3.3 Investigation History</i>		

4.0 Potential Contaminants and Source Areas

SECTIONS	DESCRIPTION	COMMENTS
<i>4.1 Known Release Areas on Site</i>		
<i>4.2 Potential Source areas /areas of contamination on Site</i>		

5.0 Adjacent Properties and Release Sites

SECTIONS	DESCRIPTION	COMMENTS
<p><i>5.1 List all adjacent site land uses(past & present)</i></p>		
<p><i>5.2 Describe any known or potential contaminant sources on adjacent sites.</i></p>		

6.0 Geological and Hydrogeological Setting

SECTIONS	DESCRIPTION	COMMENTS
<i>6.1 Regional Geology</i>		
6.2 Site Geology		
<i>6.3 Regional Hydrogeology</i>		
6.4 Site Hydrogeology		

7.0 Surface and Subsurface Soil

SECTIONS	DESCRIPTION	COMMENTS
7.1.1 Potential Contamination areas and contaminants		(include concentration ranges, if known) for surface soil
7.1.2 Potential Receptors		
7.2.1 Potential Contamination areas and contaminants		(include concentration ranges, if known) for sub-surface soil
7.2.2 Potential Receptors		

8.0 Groundwater

SECTIONS	DESCRIPTION	COMMENTS
8.1 Background contamination		
<i>8.2 Distance to Nearest drinking water source</i>		
<i>8.3 Predominant use of groundwater in the area and Site</i>		
8.4 Depth & direction of groundwater flow of the uppermost aquifer		(include aquifer name and whether it is potable)
8.5 Deeper aquifer and impermeable layers (depth, thickness and flow direction)		
8.6 Distance to Water Resource Protection Area and to GMZ (if applicable)		
8.7 Potential Contaminants		(include concentration ranges, if known)
8.8 Potential Receptor(s)		

9.0 Surface Water

SECTIONS	DESCRIPTION	COMMENTS
<i>9.1 Nearest surface water body</i>		<i>(include distance from site)</i>
<i>9.2 Site Surface drainage direction</i>		
<i>9.3 Usage of surface water at the area and Site</i>		
9.4 Potential Contaminants		(include concentration ranges, if known)
9.5 Receptors		
9.6 Offsite source of Contamination		
9.7 Groundwater to surface water loading		

10.0 Sediment

SECTIONS	DESCRIPTION	COMMENTS
10.1 Background contamination		
10.2 Site related contaminants		
10.3 Potential Receptor(s)		

11.0 Air (Vapour Intrusion)

SECTIONS	DESCRIPTION	COMMENTS
<i>11.1 Contaminant with Vapour Intrusion Potential</i>		Potential contaminant based on operation history if no other data available
<i>11.2 Current & Potential buildings within 100 m and type of building</i>		
11.3 Preferential Pathway		

12.0 Ecological Concern

Are any of the following ecologically sensitive areas (ECSA) present on or adjacent to the site? If the answer is "YES" to any of these questions, then further ecological evaluation may be necessary.

Criteria	YES or NO	DESCRIPTION	COMMENTS	GRAPHICS DATA TABLE	REFERENCE USED
12.1 ESCA on or adjacent to site					
12.1.1 Critical Habitat for endangered or threaten species					
12.1.2 Parks, wildlife refuge					
12.1.3 Coastal Barriers					
12.1.4 Spawning, migration and feeding areas					
12.1.5 Water way (stream, lake etc.)					
12.1.6 Wetland					
12.2 Site Within 1,000 m of an ECSA					
12.2.1 Connected to a ECSA via open-space, wooded area, ag land, perennial water body or other natural corridor?					
12.2.2 Storm runoff from the site discharges via a pipe or drainage swale directly to the ECSA?					
12.2.3 Evidence of soil erosion from the site such as gulleys, washout features					
12.3 The site supports fauna with a shelter or food source					
12.4 Evidence of stressed veg., barren soil, dead animals, fish kills or other ecological detriments?					

16.0 Site Conceptual Model (Table)

<i>Known and Potential Sources</i>	Impacted Media	Contaminants of Concern	Exposure Route	Receptors		Comments
				Current	Future	

Notes:

Sources: historic fill, spill areas, USTs, hotspots (arsenic, lead, NAPL), etc

Impacted Media: Soil, Groundwater, Sediment, Surface water, Soil vapor, etc

Contaminant of Concern: dominant contaminants that will drive the risk, etc

Exposure routes: inhalation of vapors, dust, dermal, ingestion, fish consumption, etc.

Receptors: area resident, future construction worker, recreational user, office worker, trespasser, gardener, fish and other ecological receptors, etc.

16.2 Conceptual Site Model (Map view)

Note: On a site map please show known and potential source areas, exposure pathways and receptors based on existing knowledge of the site and the regional area.

16.3 Conceptual Site Model (Cross-sectional View)

Note: Include a site cross section based on existing data and show source areas, potential contaminated media and migration pathway. This at initial stage can be based on knowledge on the regional area. This will be helpful to determine subsurface soil sampling and groundwater sampling.

17.0 Proposed Sampling and Analyses Plan

17.1 Proposed Sampling and Analyses Plan Table

Sampling Matrix	Sampling Locations and depth	Analysis	Comments/Justification
Surface soil			
Subsurface Soil			
Groundwater			
Air (vapor intrusion related)			
Sediment			
Surface Water			
Other Survey (geophysical, etc)			

17.2 Sampling and Analyses Plan Map

Note: Map showing location of samples and type of samples.