



Contaminant Management Plans as an Effectual Tool for Environmental Assessment and Regulatory Compliance

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Land Acknowledgement



Outline

1. Contaminant Management Plan Overview
2. Key Components of a Contaminant Management Plan:
 - a) Clear Conceptual Site Model (CSM)
 - b) Screening Level Risk Assessment (SLRA)
 - c) Qualitative Risk Assessment
3. Challenges Encountered
4. Questions

Contaminant Management Plan Overview

- Maintain regulatory compliance while minimizing production disruption on an active facility
- Time-sensitive construction projects in areas of known contamination
- Move forward with site activities while delineation is ongoing



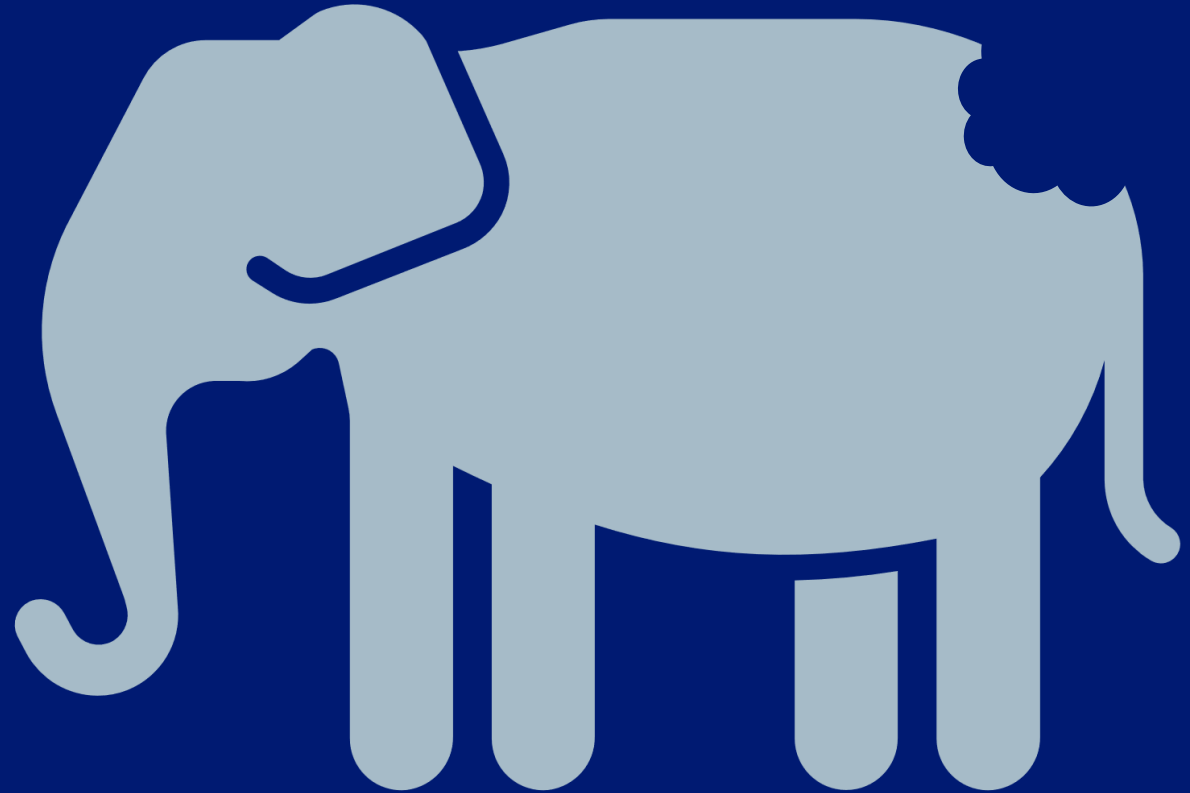
Contaminant Management Plan Overview

- Avoid long and unpredictable regulatory review times
- Overlap with routine compliance programs
- Provide assurance to the regulator and maintain operational/production schedules

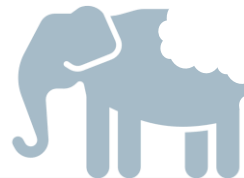
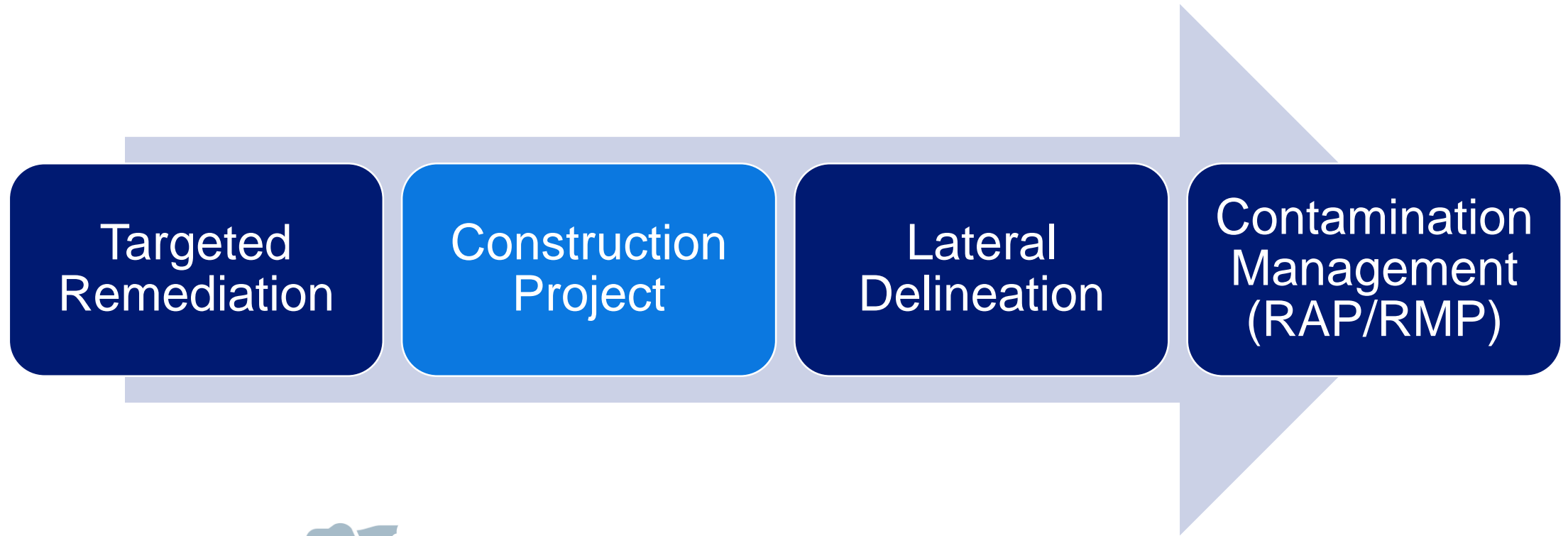


Contaminant Management Plan Overview

- “One bite at a time”
- Use a risk-based framework to prioritize and schedule activities



Contaminant Management Plan Overview



Contaminant Management Plan Process

Build Conceptual Site Model

Determine source-pathway-receptor linkages



Screening Level Risk Assessment

Determine which exposure scenarios are of potential concern



Qualitative Risk Assessment

Refine the risk of the exposure scenarios of concern and build a risk mitigation strategy

Clear Conceptual Site Model

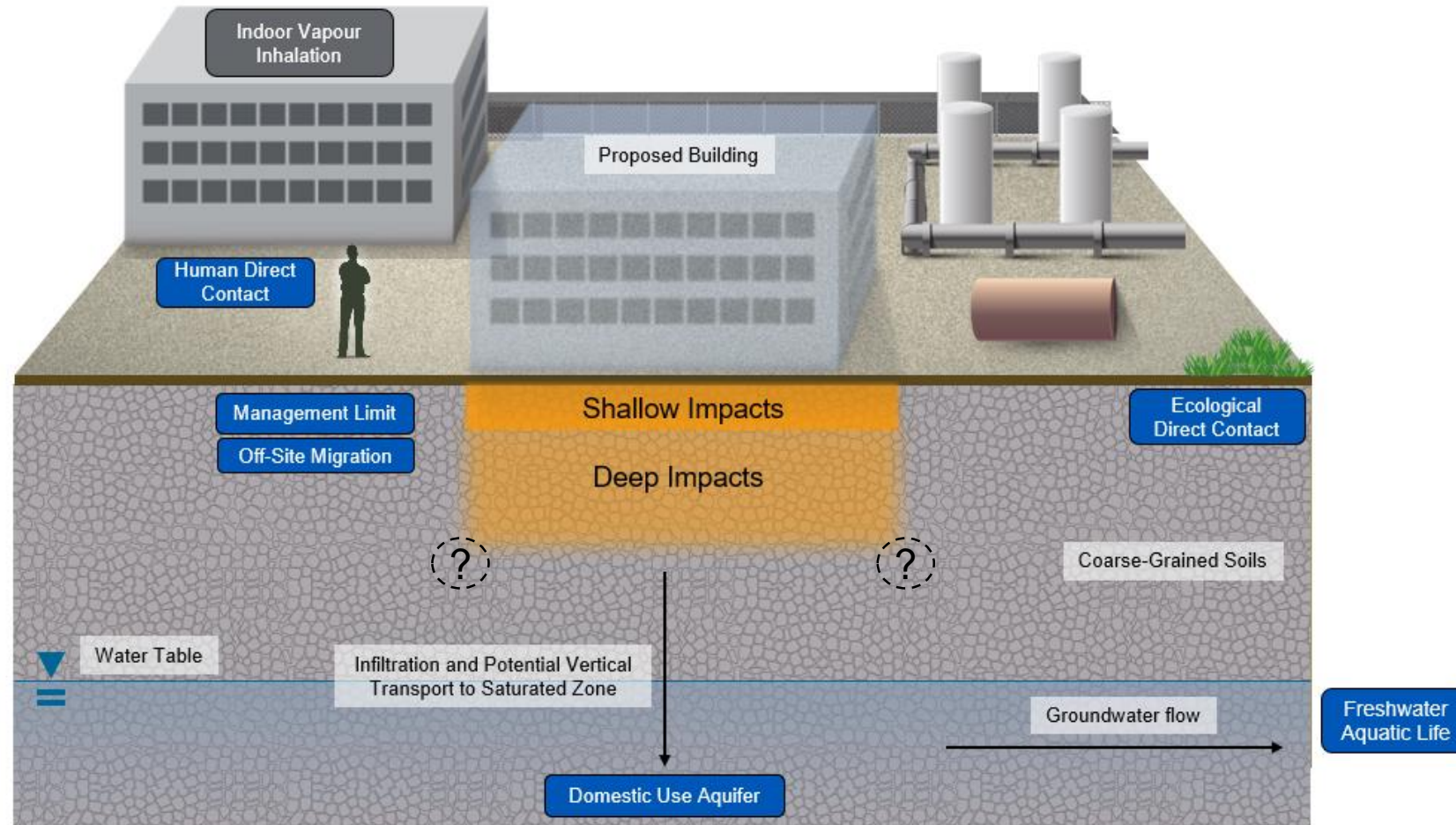
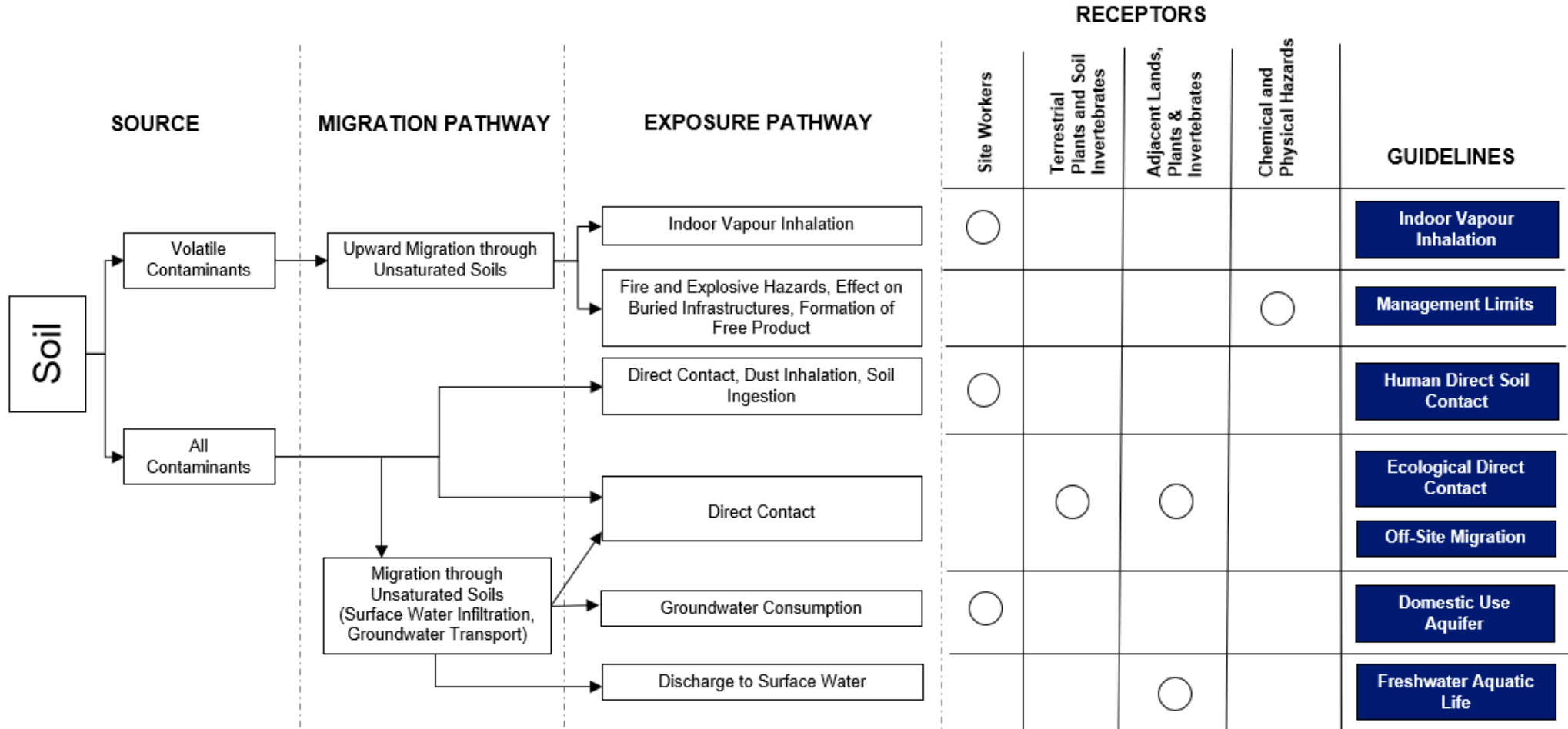


Figure prepared by Trace staff using Conceptual Site Model Builder Tool created by eSolutionsGroup Ltd., 2015, for the Contaminated Sites Division, Safe Environments Directorate, Health Canada, Ottawa

Challenges

- Petroleum hydrocarbon concentrations above management limits
- Elevated polycyclic aromatic hydrocarbon concentrations potentially anthropogenic/industrial background
- Incomplete delineation
- Potential for mandatory Tier 2 trigger (very coarse texture)
- Aggressive schedule to secure regulatory approval and minimize disruption to operations and production

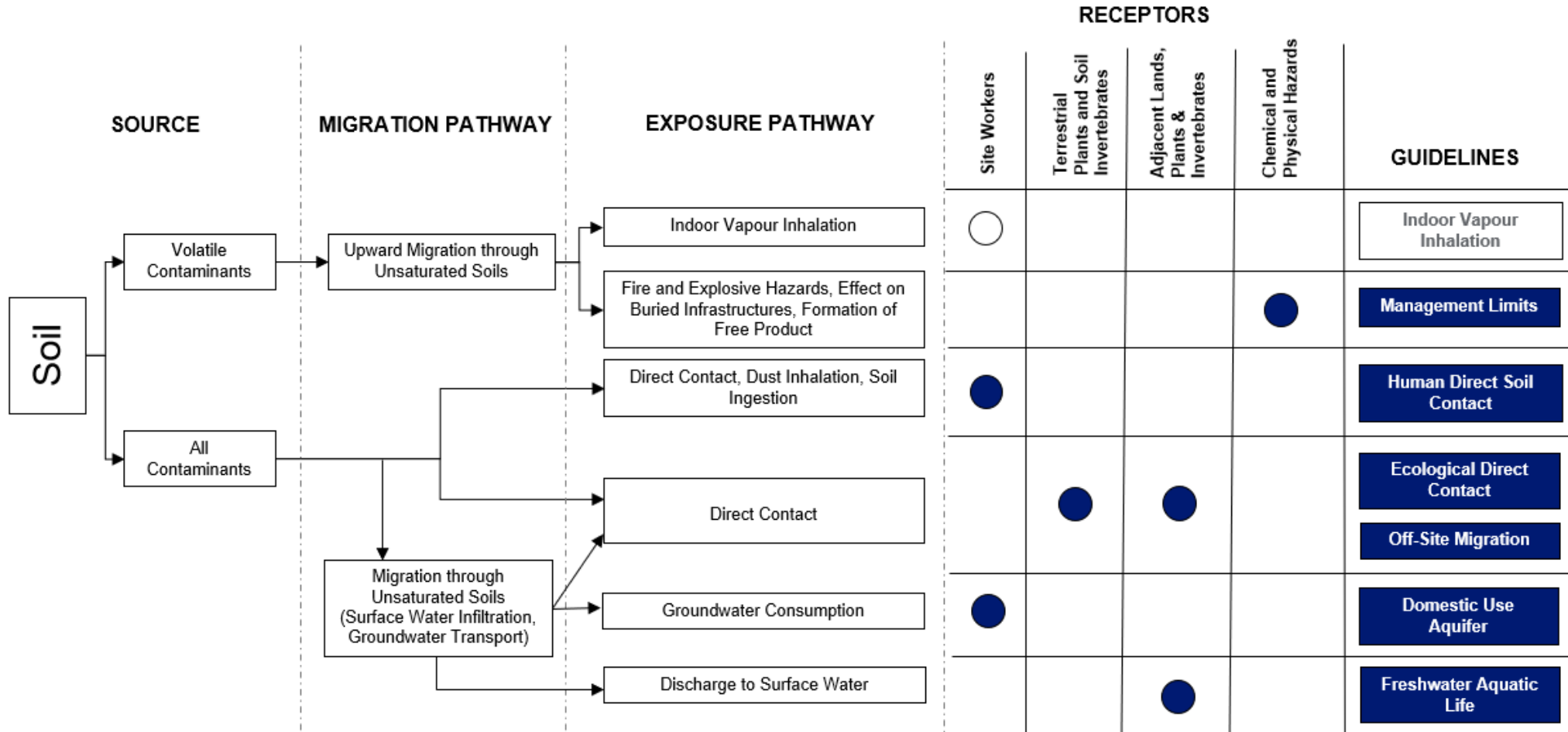
Clear Conceptual Exposure Model



Screening Level Risk Assessment

Table D: Exposure Scenarios of Concern Summary - All Soils Data						
Contaminants of Potential Concern (COPC)	Human Exposure Pathways			Ecological Exposure Pathways		Other
	Direct Soil Contact	Protection of DUA	Off-Site Migration	Direct Soil Contact / Soil Structure	Protection of Freshwater Aquatic life	Management Limit
Toluene †	-	-	-	-	X	-
PHC F3 and F4	-	-	-	X	-	X
Non-carcinogenic PAHs	-	-	-	X	X	-
Carcinogenic PAHs	X	X	X	X	-	-
Inorganic Parameters	-	-	-	X	-	-

Clear Conceptual Exposure Model

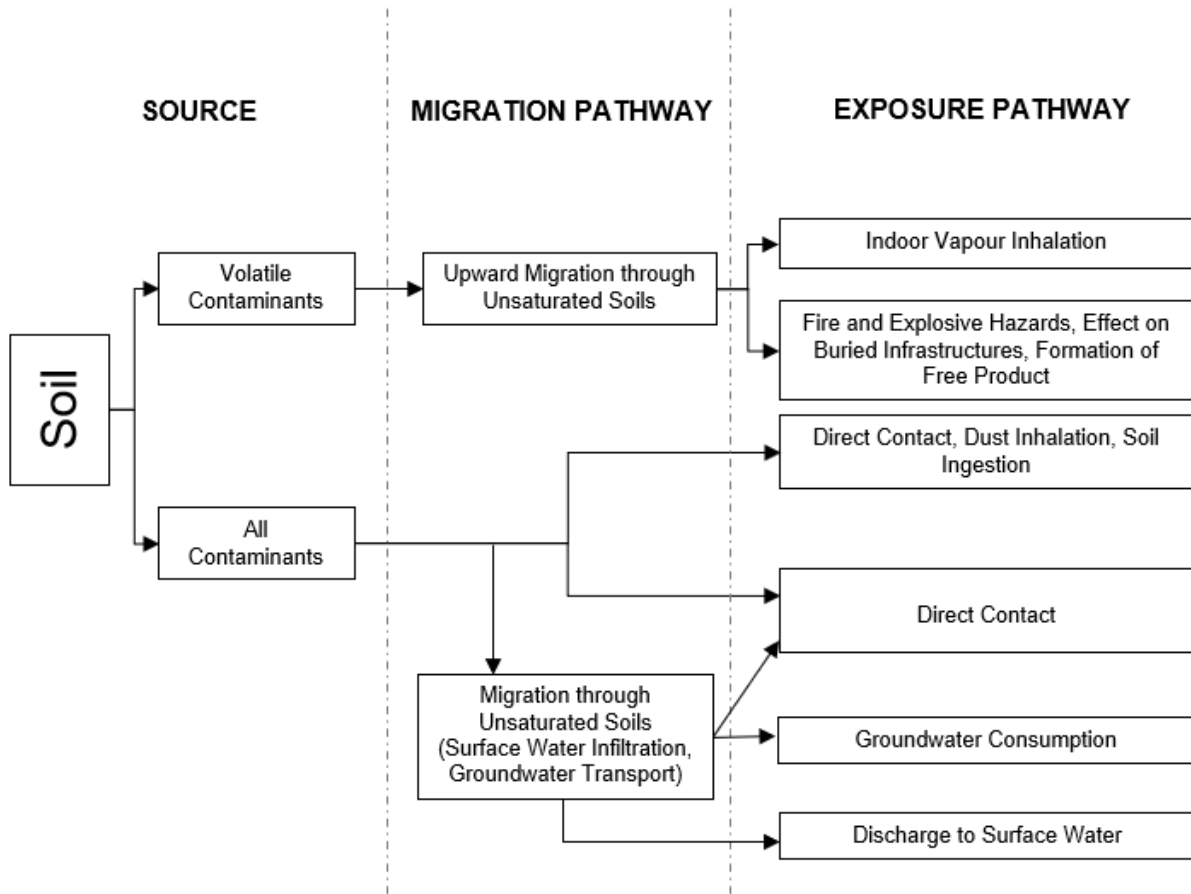


Qualitative Risk Assessment – Future Conditions

		Likelihood / Probability			
		Extremely Remote	Remote	Reasonably Probable	Probable
Consequences / Severity	Extreme	Medium	High	Extreme	Extreme
	Serious/Major	Low	Medium	High	Extreme
	Minor	Low	Low	Medium	High
	Negligible	Low	Low	Low	Medium

Clear Conceptual Exposure Model

● Remediate
● Risk Manage



RECEPTORS				
Site Workers	Terrestrial Plants and Soil Invertebrates	Adjacent Lands, Plants & Invertebrates	Chemical and Physical Hazards	GUIDELINES
○				Indoor Vapour Inhalation
			●	Management Limits
●				Human Direct Soil Contact
	●	●		Ecological Direct Contact
				Off-Site Migration
●				Domestic Use Aquifer
		●		Freshwater Aquatic Life

Conclusions

- A clear and concise CSM to communicate the understanding of the Site
- SLRA to 1) exclude scenario not presenting a risk and 2) determine the exposure scenarios of potential concern
- Qualitative Risk Assessment to refine the risk level
- The Site Management Plan includes recommendations to fill data gaps before developing a RAP/RMP while limiting delay for site activities and construction
- Open communication with regulator is critical

Questions?

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