FINAL DRAFT

SCREENING RISK ASSESSMENT – LEVEL 1 (SRA1) GUIDANCE

Prepared For:

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June 2, 2004

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ACRONYMS

BAF	Bioaccumulation Factor
BCF	Bioconcentration Factor
BCMWLAP	British Columbia Ministry of Water, Land and Air Protection
CSR	Contaminated Sites Regulation of the *Waste Management Act*
DRA1	Detailed Risk Assessment Guidance – Level 1
DRA2	Detailed Risk Assessment Guidance – Level 2
DSI	Detailed Site Investigation
EPA	United States Environmental Protection Agency
PSI	Preliminary Site Investigation
SRA1	Screening Risk Assessment Guidance – Level 1
SRA2	Screening Risk Assessment Guidance – Level 2
SWR	Special Waste Regulation of the *Waste Management Act*
WMA	*Waste Management Act*

PREFACE

This Screening Risk Guidance – Level 1 document provides guidance regarding the identification of sites that pose no unacceptable risk despite exceedances of generic numerical soil and water standards, matrix numerical standards or risk-based standards. The guidance applies to screening assessment activities that are completed after a Detailed Site Investigation. The purpose is to evaluate subject sites with contaminant concentrations exceeding generic numerical soil and water standards, matrix numerical standards or risk-based standards to determine if the exceedances may necessitate remediation, or completion of a Screening Risk Assessment – Level 2, Detailed Risk Assessment – Level 1 or Detailed Risk Assessment – Level 2. The guidance is designed around a set of prescriptive questions that are used to determine if complete exposure pathways are present. Outcomes of the questionnaire-based evaluation include:

1) there are no complete exposure pathways that require further evaluation and this aspect of the evaluation can be terminated for either human health exposures, ecological exposures or both human and ecological exposures; or,

2) there are complete exposure pathways that warrant further evaluation.

In order to complete SRA1, a site conceptual model is required. Site conceptual models provide visual summaries of critical and secondary exposure pathways and receptors, and assist users in identifying complete exposure pathways that may warrant further review. The guidance assumes the availability of a basic level of background information for the site collected during completion of the Site Investigation.

1.0 INTRODUCTION

1.1 Purpose of the document

The Screening Risk Assessment Guidance – Level 1 document (SRA1) provides a prescriptive, qualitative tool for the identification of contaminated sites which lack complete exposure pathways and/or lack potential human and ecological receptors. The approach may be used to determine if further assessment is unnecessary despite exceedances of numerical standards because exposure pathways are incomplete or receptors are not present.

Contaminant concentrations in source media may exceed generic numerical soil and water standards, matrix numerical standards or risk-based standards (CSR, Part 14, 58(1)(B)(iv); SWR; BCMWLAP Protocol 2; BCMWLAP Technical Guidance 3; BCMWLAP Technical Guidance 6; BCMWLAP Protocol 1) indicating the need for remediation of a site. However comparisons to generic numerical soil and water standards, matrix numerical standards or risk-based standards do not indicate whether humans or ecological receptors are actually being exposed. A series of questions guides the user in judging whether or not potentially complete exposure pathways exist at a site. Completing the questionnaire requires data generally collected during completion of a Site Investigation (CSR). In cases in which a question cannot be answered due to a lack of data, proceed to SRA2.

To complete SRA1, a site conceptual model is required. Site conceptual models provide visual summaries of the linkages from sources through exposure pathways and ultimately to receptors. A site conceptual model is used to judge whether exposure pathways exist at the site that might warrant further review. Conceptual model development is an iterative process and the preliminary conceptual model developed at the beginning of SRA1 will likely be modified based on answers to the questions in the questionnaire. The conceptual model may be modified further as additional information or detail becomes available in other assessment stages, as well. The level of detail and form of the conceptual model developed in SRA1 will vary from site to site. The questions in SRA1 are linked to the identified exposure pathways in a site conceptual model.

1.2 Organization of the Guidance

The SRA1 Guidance document is organized by land use categories as defined in the CSR, Part I - Interpretation. Because the decision regarding the need for further assessment is based on the presence or absence of complete exposure pathways and receptors, the conceptual model underlies and supports the SRA1 assessment process. The screening questions are focused on evaluating the presence or absence of complete exposure pathways and receptors.

To complete the screening questionnaire, an assessor will draw on data and observations made during the Site Investigation. Therefore, this document begins with a brief review of the regulatory process including a summary of the PSI and DSI as well as an overview of the larger site assessment framework. Next, an overview of the screening questionnaire is provided. Although the application and overall instructions are the same between land uses, the questions may vary depending on the land use. Finally, a chapter is provided for

each applicable land use (residential, urban parkland, commercial and industrial; agricultural land uses are not assessed in SRA1) including background information, important considerations and the prescriptive screening questionnaire.

2.0 REGULATORY FRAMEWORK OF INVESTIGATION/REMEDIATION

Site assessment and remediation in British Columbia (B.C.) is governed principally by the *Waste Management Act* (WMA) and Contaminated Sites Regulation (CSR). The work proceeds in stages with an increasing level of effort required to complete each successive stage. It is possible to exit the process after each stage depending on property conditions. Site assessment is generally divided into three phases in B.C., each with specific components. Some of these steps are administratively defined in the CSR.

2.1 History Review/Inspection

- **Site Profile:** a "best-of-knowledge" questionnaire specified by the CSR to identify specific site risk indicators. The site profile can be completed by a lay person. CSR Part 2 deals with Site Profiles.
- **First Stage Preliminary Site Investigation (Stage I PSI):** assesses potential for contamination based on historic and current use, using a standard methodology. If no material risks are identified, this is the terminal investigation. A Stage I PSI is guided by elements of CSR s58, by portions of MWLAP's Guide 10, and more generally by Canadian Standards Association (CSA) Z768-01 and other open literature.

2.2 Intrusive Investigation

- **Second Stage Preliminary Site Investigation (Stage II PSI):** assesses presence/absence of potential contaminants of concern in a limited number of highest risk media/locations. Stage II PSI will be the terminal investigation if it concludes no contamination is present. If contamination is present, the Stage II PSI effectively becomes the first iteration of a Detailed Site Investigation. A Stage II PSI is guided by elements of CSR s58, by portions of BCMWLAP's Guide 10, and more generally by CSA Z769-00 and other open literature.
- **Detailed Site Investigation (DSI):** assesses the extent and severity of contamination and gathers information required to carry out remediation. It is generally iterative. The scope is affected by remediation approach because remediation feasibility is affected by site conditions. The scope of a DSI is guided by CSR s59 and by BCMWLAP's Guide 11.

2.3 Remediation

- **Remedial plan (RP) without risk assessment:** proposes an approach to cause the site to meet numerical standards by intervention or passage of time. The content of remedial plans are generally described in a definition in CSR s1.
- **Remedial plan with risk assessment:** addresses the risk posed by contamination with some combination of removal or risk management that results in acceptable risk to human and ecological receptors, notwithstanding exceedance of numerical standards. The content of remedial plans are generally described in the definition in CSR s1, with information guiding application of risk assessment provided in CSR s18 and a number

of supporting BCMWLAP documents. At time of writing, B.C. is moving to four progressively complex risk assessment levels that may be used to evaluate the risk posed by contamination, and to evaluate the need for and scope of remediation. The four tools are at various stages of development:

I. **Screening Risk Assessment – Level 1 (SRA1)** uses simple, highly constrained administrative rules to identify situations where risk is clearly acceptable although a site exceeds numerical standards. Application of professional judgement is minimal.
II. **Screening Risk Assessment – Level 2 (SRA2)** uses highly constrained administrative rules to identify situations where risk is clearly acceptable although a site exceeds numerical standards. Application of professional judgement is limited.
III. **Detailed Risk Assessment – Level 1 (DRA1)** "Standard" baseline risk assessment with some restrictions with respect to methods. Application of professional judgement is extensive.
IV. **Detailed Risk Assessment – Level 2 (DRA2)** Completely customized risk assessment.

At the time of writing, a human health risk assessment can only be completed at what is equivalent to DRA1 or DRA2. Ecological risk assessment can be completed at levels equivalent to DRA1 (BCMWLAP's Protocol 1) and DRA2. This document concerns itself with SRA1. SRA1 is not expected to be static. SRA1 will likely evolve rapidly as the other risk assessment guidance is developed and those findings propagate back to SRA1, and then more slowly as the science advances and regulatory resources allow upgrades.

3.0 SCREENING RISK ASSESSMENT GUIDANCE – LEVEL 1 OVERVIEW

SRA1 is designed to assist assessors in the process of determining whether conditions at a site require remediation given that generic numerical soil and water standards, matrix numerical standards or risk-based standards have been exceeded. The guidance provides the assessor with a series of questions with suggested options depending on the answer to each question. The questions have been selected to identify conditions that are likely to either result in incomplete exposure pathways across a site (e.g. barrier such as pavement over soil contamination), as well as conditions that clearly warrant remediation (e.g. contamination in accessible soil). Development of a site conceptual model is required for SRA1. However, the level of complexity and form of the conceptual model will vary for each site. Additionally, conceptual model development is an iterative process, therefore the conceptual model developed in SRA1 will likely be modified throughout the assessment process. In SRA1, a preliminary site conceptual model is developed prior to completing the questionnaire and then a final revised conceptual model is completed based on the answers to the questionnaire.

In this Section, a brief overview of conceptual modeling is followed by instructions for completion of the screening questionnaire in SRA1.

3.1 Conceptual Modeling

A conceptual model is a display of the linkages among sources, exposure pathways (release mechanism, transport medium, exposure route), and receptors at and near a site. Complete exposure pathways exist when linkages between sources, pathways and receptors are found to exist. When such linkages do not exist, the exposure pathways are considered to be incomplete. Complete exposure pathways indicate that receptors can be exposed to the contaminants present in source areas either directly or via the identified exposure pathways. The presence of complete exposure pathways indicates a potential for exposure and risk that may require further evaluation; incomplete exposure pathways indicate that exposures are not occurring and, therefore, the receptors are not at risk. Depending on the oversight agency, the assessor and the site, conceptual models are found in many different formats.

A conceptual model offers assessors a tool by which to visualize the ‘problem’ to be assessed and the important pathways. For complex sites, conceptual models often serve to organize research and risk calculations. Figure 1 provides a summary of the components of a conceptual model. Appendix A provides a detailed summary of conceptual model development, in addition to providing common modeling pitfalls and resolutions. The screening questionnaire in this guidance document focuses on determining whether any complete exposure pathways are present at a site.

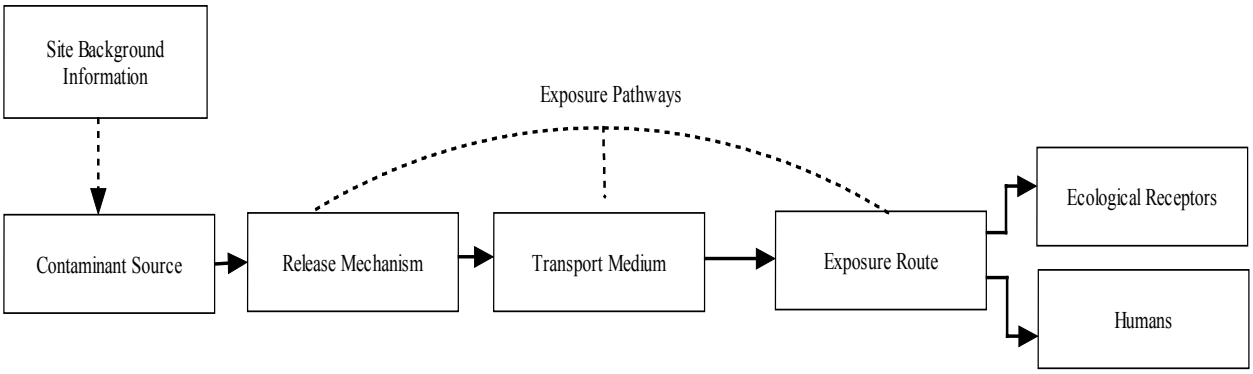

Figure 1. Conceptual Model Framework

3.2 Application of Screening Questionnaire

Application of this guidance document involves the completion of a screening questionnaire. The questionnaire is divided into general questions, human exposure questions and ecological exposure questions.

General questions explore the source of the contamination, impacted media, migration of contamination, accessibility of contamination in soil, characteristics of contaminants and concentrations. Although the range of questions is broad, the information required to answer each question should have been collected during the PSI and DSI.

If necessary, human pathway questions specifically focus on the presence of humans on the site as well as the potential for groundwater exposures.

The ecological pathway question focuses on the presence of bare or vegetated soil and migrating groundwater contamination.

The series of questions have been selected to evaluate the conditions most likely to determine if an exposure pathway is complete or incomplete. Although the specific options vary for each question, in general, the answer to each question will direct a user to either:

Exit[1] the screening process;

Complete the human and/or the ecological exposure questionnaires;

Exit[1] the process for either or both the human and ecological exposure questions; Undertake a more detailed assessment of the site which may include additional data collection and/or modeling in SRA2, DRA1, or DRA2; or,

Remediate the site.

The guidance does not direct a user to a specific assessment type because requirements and issues requiring review will vary at each site.

A few general assumptions underlying the questions include:

The answers to each question should explicitly consider both 'current and reasonable potential future' conditions and land uses as specified in the CSR, Section 12, Subsection 5; if conditions change, then SRA1 should be re-applied to the new site conditions. Examples of changes that may occur include: the addition or removal of a building, excavation and soil mixing due to utility installation or maintenance, transition from one land use type to another such as agriculture to industrial, gradual weathering of a barrier;

Contamination isolated in subsurface media is assumed to remain inaccessible. If construction or utility excavation work occurs, SRA1 should be revisited based on new site conditions;

Property is defined as 'legal property under current ownership';

Site is defined in CSR, s11;

"special waste" as defined in SWR, Part 1 – Interpretation and Application and under the Environmental Management Act;

Landscaped areas on commercial or industrial sites in urban areas are excluded from ecological screening in SRA1;

Agricultural land uses are not assessed in SRA1 because evaluation of ecological risks at agricultural sites is too complex to address in SRA1. Proceed to SRA2, DRA or site remediation for agricultural lands;

[1] The options available to the assessor when directed to 'Exit' the screening process include:
If no complete exposure pathways are present – no further assessment required;
If complete exposure pathways are present – complete a DRA or remediate the site;
If an assessor is unable to determine if complete exposure pathways are present – complete an SRA2, DRA1, or DRA2 depending on information required to evaluate exposure pathways or remediate the site.

Barriers over contamination sources or areas where contamination may migrate may prevent exposures. Where a barrier is identified, it is assumed that the barrier is permanent for current and foreseeable future site uses and will be maintained as such. While it is unlikely that barriers would cover entire urban parklands, it is possible that barriers may cover contaminant source areas in this land use. As a result, a question about barriers is included for all land uses; and,

Selection of the applicable land use category is completed by the assessor.

In addition to these assumptions, numerical and qualitative guidelines are employed in the questionnaire. The values, intended application, and sources for a subset of the guidelines in the questionnaire are summarized in Table 1 below.

Upon completion of each question in the questionnaire, a brief narrative should be presented explaining the rationale for the response.

3.3 Documentation in SRA1

Documentation for SRA1 should include:

Introduction with a rationale for conducting the SRA1;

Description of current and past site use;

Description of past site investigations;

Description of the site and adjacent properties;

Description of the extent of contamination;

Maps of site and sampling locations;

Summary of data used in SRA1;

Preliminary site conceptual model;

Rationale explaining the answer to each question; and,

Final site conceptual model incorporating the results of responses to the questions.

An outline of the SRA1 documentation is provided in Figure 2 and an example is provided in Appendix B.

Table 1. Summary of Numerical and Qualitative Guidelines Applied in Questionnaire

Numeric or Qualitative Guideline	Intended Application	Source
Beneficial Uses: galvanized materials and treated wood	These uses are implicitly accepted as beneficial. The beneficial use exclusion is explicitly defined as soils containing zinc within 0.3 meters of galvanized materials OR soils within 0.3 meters of treated wood products only.	The uses are implicitly accepted as beneficial and the circumference of impact is based on typical observations of the halo of effects
Concentrations that are 10X standards	Identify areas that may require more detailed attention because of particularly elevated concentrations	Professional Judgment
Special Waste	Identify waste materials requiring more detailed assessment beyond the scope of SRA1	Special Waste Regulation of *Waste Management Act*, Part 1 – Interpretation and Application
Bioaccumulative contaminants defined as contaminants with a BAF≥5,000, BCF≥5,000 OR a $LogK_{ow}$≥5.0. The BAF, BCF or $LogK_{ow}$ for each chemical must be obtained from a peer reviewed source.	Bioaccumulative contaminants pose a unique risk because species/humans who may not be directly exposed to the waste, can be exposed through consumption of biota that bioaccumulate contaminants	Canadian Environmental Protection Act, 1999 – Regulation for Persistence and Bioaccumulation, Sections 73-77.
Are volatile contaminants present? (A volatile is defined as any contaminant listed in US EPA 8260B Method)	Volatile contaminants pose a unique risk because they may result in concentrated exposures in buildings and exposures at a distance from the source through air transport	US EPA Method 8260B – Volatile Assessment – - contaminants occurring on the GC/MS analyte list http://www.epa.gov/epaoswer/hazwaste/test/pdfs/8260b.pdf
Are drinking water wells within 1.5 km of the site?	Drinking water, if contaminated, can be an important exposure pathway because water is taken in directly and consumed regularly	BCMWLAP. Tech Guide 6
Is groundwater contamination on the site within 1km of aquatic media?	Captures potential ecological exposures due to conveyance of contaminants in groundwater to aquatic media.	BCMWLAP. Tech Guide 6
Is contamination located in the upper 1m of soil?	This depth is considered accessible surface soil.	Professional Judgment

Figure 2. SRA1 Documentation Outline

1 INTRODUCTION
1.1 Study Objective
1.2 Scope of Work

2 BACKGROUND
2.1 General Site Description
2.1.1 Existing
2.1.2 Future (delete subsections if status quo)

2.2 Summary of Environmental Site Investigations
2.2.1 Phase 1
2.2.2 PSI
2.2.3 DSI
2.2.4 Contaminants of Concern and List of Chemicals Exceeding the Standards
2.2.5 Chemical Fate and Transport

2.3 Receptor Identification
2.3.1 Human Receptors
2.3.2 Ecological Receptors

2.4 Preliminary Conceptual Model

3 RESPONSE TO SRA1 QUESTIONS
3.1 General
3.1.1 Q1-1
3.1.2 Q1-2
3.1.3 Q1-3
3.1.4 Q1-4
3.1.5 Q1-5
3.1.6 Q1-6
3.1.7 Q1-7

3.2 Human Health
3.2.1 Q2-1
3.2.2 Q2-2
3.2.3 Q2-3
3.2.4 Q2-4
3.2.5 Q2-5
3.2.6 Q2-6

3.3 Ecological
3.3.1 Q3-1
3.3.2 Q3-2

4 FINAL CONCEPTUAL MODEL

5 CONCLUSION

6 PROFESSIONAL STATEMENT

Figure(s) or Table(s): Conceptual model

Figure: Site diagrams (plan and cross section) illustrating sample locations, exceedances of applicable standards, inferred extent of contamination. Ideally one set of figures for each co-occurring group of contaminants of concern.

As discussed previously, the guidance is divided into four land use categories. Each land use may present specific characteristics that require a unique series of questions. Identify the land use applicable to the subject site and proceed to the applicable chapter:

Chapter 4	Residential Land Use
Chapter 5	Urban Park Land Use
Chapter 6	Commercial Land Use
Chapter 7	Industrial Land Use

4.0 RESIDENTIAL LAND USE

The assessment of a site for residential land use is described below. The CSR s1 defines residential land use as:

> "use of land for the primary purpose of: (a) a residence by persons on a permanent, temporary or seasonal basis, including, without limitation, single family dwellings, cabins, apartments, condominiums or townhouses or (b) institutional facilities, including, without limitation, schools, hospitals, daycare operations, prisons, correctional centers and community centres" (CSR).

4.1 Assessment Considerations

A number of considerations regarding residential land uses should be reviewed prior to completing the questionnaire. Considerations specific to residential land uses include:

> The type of residential activity will impact the potential for exposure. For example, the presence of a school may result in different exposures than the presence of a single family home. Also, a high-rise condominium complex would result in exposures that differ from those of a hospital. Understanding the human population inhabiting the residence (e.g. children may be more sensitive than adults, hospital populations may be more sensitive than healthy populations) as well as the type of structure (e.g. size and height may impact exposures) will facilitate completion of the questionnaire.
>
> Consideration of zoning may also be important in this screening step. Understanding the limitations or exclusions can provide a better understanding of potential exposures. For example, characterization of a site with a single-family home that is zoned for a school might differ from characterization of a site that is only zoned for single-family homes.
>
> In residential areas, the adjacent properties may also be residences. However, this is not always the case and it may be informative to review adjacent land uses and the exposure pathways that may be present in those areas.

Understanding the land use and unique characteristics of the land use will assist in completion of the questionnaire that follows.

4.2 Residential Land Use Screening Questionnaire

The questionnaire provided below is divided into three series of questions. They include: general questions, human exposure questions and ecological exposure questions. Begin by completing the general questions. Completion of the human and ecological questions will depend on answers to the general questions. Progression through the questionnaire is guided by the answers to the questions. The answers include, Yes, No or Uncertain. When

there is uncertainty in an answer, the questionnaire is designed to be conservative. When the guidance indicates that further assessment is required, a user may choose to:

> Conduct additional sampling and/or analysis of the data in order to complete the SRA1 questionnaire (in a case where there is uncertainty about an answer to a question in SRA1);
>
> Conduct an SRA2, DRA1 or DRA2 (assessors may shift the assessment to any of these applicable to the issues at a particular site); or,
>
> Remediate the site.

If after completing the general questions, further analysis or exiting the process have not been prescribed, then the assessment continues with the human and/or ecological exposure questionnaires. Where an answer for human exposure questions indicates that a user may exit the human exposure screening process, the assessment of ecological exposures may still be required to complete SRA1.

Upon completion of each question of the questionnaire, a brief narrative should be presented explaining the rationale for each response. Appendix B provides a case study example of the question-specific rationales and the SRA1 documentation.

General Questions

1-1 Is a beneficial use the sole source of contamination and is that contamination localized around the beneficial use only? Beneficial uses include zinc within 0.3m of galvanized materials and soil within 0.3m of treated wood.

If NO or UNCERTAIN, then proceed to Question 1-2
If YES, then requirements for SRA1 have been met. No further assessment is required. Prepare SRA1 case narrative.

1-2 Is site contamination located in:

SEDIMENT (particulate material that usually lies below water – Sediment Criteria and Guidance, Protocol 19) ***OR***
SURFACE WATER (streams, rivers, lakes, estuaries, ocean or other water bodies as defined in Section 2.2.3 of the Tier 1 Ecological Risk Assessment Guidance, Protocol 1)

If NO, then proceed to Question 1-3
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-3 Has site contamination migrated to adjacent properties OR is fate and transport modeling required to determine the potential for migration to adjacent properties?

If NO, then proceed to Question 1-4
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-4 Is the contaminated portion of the property or areas to which contamination has migrated covered by a barrier including but not limited to: pavement/cement, buildings, that will prevent wildlife or human contact with the soil? The barrier must be permanent under current and foreseeable future conditions and must be maintained as such.

If NO or UNCERTAIN, then proceed to Question 1-5
If YES, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway

1-5 Are there areas (and media) with contaminant concentrations that are 10x the standards or areas containing 'special waste'?

IF NO, then proceed to Question 1-6
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-6 Are bioaccumulative contaminants located in or migrating to accessible media on the property? (Bioaccumulative contaminants defined as BAF ≥ 5,000 OR BCF ≥ 5,000 OR LogKow ≥ 5.0; BAF, BCF and Log Kow for subject contaminants must be obtained from peer reviewed literature)

IF NO, then proceed to Question 1-7
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-7 Is contamination located in or migrating to the upper 1m of soil?

IF NO, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway
IF UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site
IF YES, proceed to both the human and ecological exposure questionnaires

Human Exposure Questions

2-1 Are humans (e.g., trespassers, recreational users, workers, residents) participating in outdoor activities on the property or in areas adjacent to the property where generic soil or applicable human health protection "intake of contaminated soil" matrix standards are exceeded?

IF NO, then proceed to Question 2-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-2 Are humans living, or working in buildings located on the property or on adjacent properties?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-3

2-3 Are volatile contaminants present in subsurface media? (Volatile contaminants include analytes on United States Environmental Protection Agency, Volatile Organic Compounds Gas Chromatography/Mass Spectrometry Analyte List, Method 8260B)

IF NO, then proceed to Question 2-4
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-4 Are non-volatile contaminants in groundwater?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-5

2-5 Is groundwater brackish and not used for drinking water?

IF NO or UNCERTAIN, then proceed to Question 2-6
IF YES, then human health risk is acceptable, exit the Human Exposure Questionnaire

2-6 Are drinking water wells or drinking water source waters located within 1.5 km of the property?

IF NO, then Exit Human Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

Ecological Exposure Question

3-1 Is bare or vegetated soil available on the site? Soil or vegetation in planters (soil confined by a container or on top of a structure) or vegetation growing through a barrier (e.g. cracks in concrete) are excluded.

IF NO, then proceed to Question 3-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

3-2 Is groundwater contamination on the site within 1km of aquatic media?

IF NO, then ecological risk is acceptable, exit the Ecological Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

5.0 URBAN PARK LAND USE

The assessment of a site for urban parkland use is described below. The CSR s1 defines urban parkland use as:

> "the use of urban land for the primary purpose of outdoor recreation including, without limitation, municipal parks, fairgrounds, sports fields, rifle ranges, captive wildlife parks, biking and hiking areas, community beaches and picnic areas, but does not mean wildlands such as ecological reserves, national or provincial parks, protected wetlands or woodlands, native forests, tundra or alpine meadows" (CSR).

5.1 Assessment Considerations

A number of considerations regarding urban parkland uses should be reviewed prior to completing the questionnaire. Considerations specific to urban parkland uses include:

> Developing an understanding of the range of activities that may occur in an urban parkland will assist in identifying important exposure pathways. For example, some activities may be low impact, such as walking, whereas picnicking may result in more direct contact with soil and other media.
>
> Urban parklands, although characterized as a park, may contain little unmanaged habitat for wildlife. Mapping areas that are heavily impacted by human activities including application of landscaping treatments will be important for identifying potential ecological exposures.
>
> Buildings on urban parklands may also be important exposure areas. For example, some parklands may include 24-hour security details who occupy security facilities. Other parks may include indoor recreation facilities.

Understanding the land use and unique characteristics of the land use will assist in completion of the questionnaire that follows.

5.2 Urban Park Land Use Screening Questionnaire

The questionnaire provided below is divided into three series of questions. They include: general questions, human exposure questions and ecological exposure questions. Begin by completing the general questions. Completion of the human and ecological questions will depend on answers to the general questions. Progression through the questionnaire is guided by the answers to the questions. The answers include, Yes, No or Uncertain. When there is uncertainty in an answer, the questionnaire is designed to be conservative. When the guidance indicates that further assessment is required, a user may choose to:

> Conduct additional sampling and/or analysis of the data in order to complete the SRA1 questionnaire (in a case where there is uncertainty about an answer to a question in SRA1);

Conduct an SRA2, DRA1 or DRA2 (assessors may shift the assessment to any of these applicable to the issues at a particular site); or,

Remediate the site.

If after completing the general questions, further analysis or exiting the process have not been prescribed, then the assessment continues with the human and/or ecological exposure questionnaires. Where an answer for human exposure questions indicates that a user may exit the human exposure screening process, the assessment of ecological exposures may still be required to complete SRA1.

Upon completion of each question of the questionnaire, a brief narrative should be presented explaining the rationale for each response. Appendix B provides a case study example of the question-specific rationales and the SRA1 documentation.

General Questions

1-1 Is a beneficial use the sole source of contamination and is that contamination localized around the beneficial use only? Beneficial uses include zinc within 0.3m of galvanized materials and soil within 0.3m of treated wood.

If NO or UNCERTAIN, then proceed to Question 1-2
If YES, then requirements for SRA1 have been met. No further assessment is required. Prepare SRA1 case narrative.

1-2 Is site contamination located in:

SEDIMENT (particulate material that usually lies below water – Sediment Criteria and Guidance, Protocol 19) ***OR*** *SURFACE WATER* (streams, rivers, lakes, estuaries, ocean or other water bodies as defined in Section 2.2.3 of the Tier 1 Ecological Risk Assessment Guidance, Protocol 1)

If NO, then proceed to Question 1-3
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-3 Has site contamination migrated to adjacent properties OR is fate and transport modeling required to determine the potential for migration to adjacent properties?

If NO, then proceed to Question 1-4
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-4 Is the contaminated portion of the property or areas to which contamination has migrated covered by a barrier including but not limited to: pavement/cement, buildings, that will prevent wildlife or human contact with the soil? The barrier must be permanent under current and foreseeable future conditions and must be maintained as such.

If NO or UNCERTAIN, then proceed to Question 1-5
If YES, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway

1-5 Are there areas (and media) with contaminant concentrations that are 10x the standards or areas containing 'special waste'?

IF NO, then proceed to Question 1-6
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-6 Are bioaccumulative contaminants located in or migrating to accessible media on the property? (Bioaccumulative contaminants defined as BAF ≥ 5,000 OR BCF ≥ 5,000 OR LogKow ≥ 5.0; BAF, BCF and Log Kow for subject contaminants must be obtained from peer reviewed literature)

IF NO, then proceed to Question 1-7
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-7 Is contamination located in or migrating to the upper 1m of soil?

IF NO, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway
IF UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site
IF YES, proceed to both the human and ecological exposure questionnaires

Human Exposure Questions

2-1 Are humans (e.g., trespassers, recreational users, workers, residents) participating in outdoor activities on the property or in areas adjacent to the property where generic soil or applicable human health protection "intake of contaminated soil" matrix standards are exceeded?

IF NO, then proceed to Question 2-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-2 Are humans living, or working in buildings located on the property or on adjacent properties?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-3

2-3 Are volatile contaminants present in subsurface media? (Volatile contaminants include analytes on United States Environmental Protection Agency, Volatile Organic Compounds Gas Chromatography/Mass Spectrometry Analyte List, Method 8260B)

IF NO, then proceed to Question 2-4
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-4 Are non-volatile contaminants in groundwater?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-5

2-5 Is groundwater brackish and not used for drinking water?

IF NO or UNCERTAIN, then proceed to Question 2-6
IF YES, then human health risk is acceptable, exit the Human Exposure Questionnaire

2-6 Are drinking water wells or drinking water source waters located within 1.5 km of the property?

IF NO, then Exit Human Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

Ecological Exposure Question

3-1 Is bare or vegetated soil available on the site? Soil or vegetation in planters (soil confined by a container or on top of a structure) or vegetation growing through a barrier (e.g. cracks in concrete) are excluded.

IF NO, proceed to Question 3-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

3-2 Is groundwater contamination on the site within 1km of aquatic media?

IF NO, then ecological risk is acceptable, exit the Ecological Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

6.0 COMMERCIAL LAND USE

The assessment of a site for commercial land use is described below. The CSR s1 defines commercial land use as:

> "the use of land for the primary purpose of buying, selling or trading of merchandise or services including, without limitation, shopping malls, office complexes, restaurants, hotels, motels, grocery stores, automobile service stations, petroleum distribution operations, dry cleaning operations, municipal yards, warehouses, law courts, museums, churches, golf courses, government offices, air and sea terminals, bus and railway stations, and storage associated with these uses" (CSR).

6.1 Assessment Considerations

A number of considerations regarding commercial land uses should be reviewed prior to completing the questionnaire. Considerations specific to commercial land uses include:

> A range of activities, each with a unique set of exposures, may occur on commercial properties. When reviewing the activities it is important to identify potential exposures including exposure media, e.g. are humans drinking water in the facilities, spending time indoors, exposure times, i.e. consider the difference between exposures at a hotel or office building, compared to exposures in a bus station or mall.
>
> Commercial properties might be expected to be heavily landscaped, however it is possible that habitat may exist on the site boundaries or on other parts of the site. Impacts on commercial properties may be expected to occur in close proximity to the activity, but may not extend to the entire site. Also, the range of commercial activities is broad. A golf course may be more likely to contain habitat at the boundaries, than a large shopping mall that largely consists of paved parking areas and facility buildings.
>
> Barriers to exposure, such as paved parking areas, side walks, cement pads etc. should be identified and considered when completing the screening questionnaire.

Understanding the land use and unique characteristics of the land use will assist in completion of the questionnaire that follows.

6.2 Commercial Land Use Screening Questionnaire

The questionnaire provided below is divided into three series of questions. They include: general questions, human exposure questions and ecological exposure questions. Begin by completing the general questions. Completion of the human and ecological questions will depend on answers to the general questions. Progression through the questionnaire is

guided by the answers to the questions. The answers include, Yes, No or Uncertain. When there is uncertainty in an answer, the questionnaire is designed to be conservative. When the guidance indicates that further assessment is required, a user may choose to:

Conduct additional sampling and/or analysis of the data in order to complete the SRA1 questionnaire (in a case where there is uncertainty about an answer to a question in SRA1);

Conduct an SRA2, DRA1 or DRA2 (assessors may shift the assessment to any of these applicable to the issues at a particular site); or,

Remediate the site.

If after completing the general questions, further analysis or exiting the process have not been prescribed, then the assessment continues with the human and/or ecological exposure questionnaires. Where an answer for human exposure questions indicates that a user may exit the human exposure screening process, the assessment of ecological exposures may still be required to complete SRA1.

Upon completion of each question of the questionnaire, a brief narrative should be presented explaining the rationale for each response. Appendix B provides a case study example of the question-specific rationales and the SRA1 documentation.

General Questions

1-1 Is a beneficial use the sole source of contamination and is that contamination localized around the beneficial use only? Beneficial uses include zinc within 0.3m of galvanized materials and soil within 0.3m of treated wood.

If NO or UNCERTAIN, then proceed to Question 1-2
If YES, then requirements for SRA1 have been met. No further assessment is required. Prepare SRA1 case narrative.

1-2 Is site contamination located in:

SEDIMENT (particulate material that usually lies below water – Sediment Criteria and Guidance, Protocol 19) ***OR*** *SURFACE WATER* (streams, rivers, lakes, estuaries, ocean or other water bodies as defined in Section 2.2.3 of the Tier 1 Ecological Risk Assessment Guidance, Protocol 1)

If NO, then proceed to Question 1-3
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-3 Has site contamination migrated to adjacent properties OR is fate and transport modeling required to determine the potential for migration to adjacent properties?

If NO, then proceed to Question 1-4
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-4 Is the contaminated portion of the property or areas to which contamination has migrated covered by a barrier including but not limited to: pavement/cement, buildings, that will prevent wildlife or human contact with the soil? The barrier must be permanent under current and foreseeable future conditions and must be maintained as such.

If NO or UNCERTAIN, then proceed to Question 1-5
If YES, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway

1-5 Are there areas (and media) with contaminant concentrations that are 10x the standards or areas containing 'special waste'?

IF NO, then proceed to Question 1-6
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-6 Are bioaccumulative contaminants located in or migrating to accessible media on the property? (Bioaccumulative contaminants defined as BAF ≥ 5,000 OR BCF ≥ 5,000 OR LogKow ≥ 5.0; BAF, BCF and Log Kow for subject contaminants must be obtained from peer reviewed literature)

IF NO, then proceed to Question 1-7
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-7 Is contamination located in or migrating to the upper 1m of soil?

IF NO, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway
IF UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site
IF YES, proceed to both the human and ecological exposure questionnaires

Human Exposure Questions

2-1 Are humans (e.g., trespassers, recreational users, workers, residents) participating in outdoor activities on the property or in areas adjacent to the property where generic soil or applicable human health "intake of contaminated soil" matrix standards are exceeded?

IF NO, then proceed to Question 2-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-2 Are humans living, or working in buildings located on the property or on adjacent properties?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-3

2-3 Are volatile contaminants present in subsurface media? (Volatile contaminants include analytes on United States Environmental Protection Agency, Volatile Organic Compounds Gas Chromatography/Mass Spectrometry Analyte List, Method 8260B)

IF NO, then proceed to Question 2-4
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-4 Are non-volatile contaminants in groundwater?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-5

2-5 Is groundwater brackish and not used for drinking water?

IF NO or UNCERTAIN, then proceed to Question 2-6
IF YES, then human health risk is acceptable, exit the Human Exposure Questionnaire

2-6 Are drinking water wells or drinking water source waters located within 1.5 km of the property?

IF NO, then Exit Human Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

Ecological Exposure Question

3-1 Is bare or vegetated soil available on the site?
(Landscaped areas on commercial or industrial sites in urban areas are excluded from ecological screening in SRA1; in addition soil or vegetation in planters (soil confined by a container or on top of a structure) or vegetation growing through a barrier (e.g. cracks in concrete) are excluded.)

IF NO, proceed to Question 3-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

3-2 Is groundwater contamination on the site within 1km of aquatic media?

IF NO, then ecological risk is acceptable, exit the Ecological Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

7.0 INDUSTRIAL LAND USE

The assessment of a site for industrial land use is described below. The CSR s1 defines industrial land use as:

> "the use of land for the primary purpose of conducting industrial manufacturing and assembling processes and their ancillary uses including, without limitation, factories, metal foundries, wood treatment facilities, mines, refineries, hydroelectric dams, metal smelters, automotive assembly plants, rail car or locomotive maintenance facilities, rail yards, non-retail breweries and bakeries, roads and highways, wastewater and sewage treatment plants, electrical transformer stations and salvage yards" (CSR).

7.1 Assessment Considerations

A number of considerations regarding industrial land uses should be reviewed prior to completing the questionnaire. Considerations specific to industrial land uses include:

> Based on the range of potential industrial activities, it is unlikely that habitat will occur on industrial properties. However, a review of the land uses at a site will be valuable in understanding potential exposures. Some facilities may contain habitat at the boundaries of a site.
>
> Activities at an industrial site may impact exposures. Developing an understanding of the activity and how the activity impacts media on the site is important in understanding potential migration of contaminants and exposure activities.
>
> Industrial activities often involve a complex group of workers. The tasks may be highly variable in terms of potential for exposures. For example, mine workers may spend a workday underground, while factory workers activities may be focused inside a building, or include movement of supplies in a supply yard.

Understanding the land use and unique characteristics of the land use will assist in completion of the questionnaire that follows.

7.2 Industrial Land Use Screening Questionnaire

The questionnaire provided below is divided into three series of questions. They include: general questions, human exposure questions and ecological exposure questions. Begin by completing the general questions. Completion of the human and ecological questions will depend on answers to the general questions. Progression through the questionnaire is guided by the answers to the questions. The answers include, Yes, No or Uncertain. When there is uncertainty in an answer, the questionnaire is designed to be conservative. When the guidance indicates that further assessment is required, a user may choose to:

Conduct additional sampling and/or analysis of the data in order to complete the SRA1 questionnaire (in a case where there is uncertainty about an answer to a question in SRA1);

Conduct an SRA2, DRA1 or DRA2 (assessors may shift the assessment to any of these applicable to the issues at a particular site); or,

Remediate the site.

If after completing the general questions, further analysis or exiting the process have not been prescribed, then the assessment continues with the human and/or ecological exposure questionnaires. Where an answer for human exposure questions indicates that a user may exit the human exposure screening process, the assessment of ecological exposures may still be required to complete SRA1.

Upon completion of each question of the questionnaire, a brief narrative should be presented explaining the rationale for each response. Appendix B provides a case study example of the question-specific rationales and the SRA1 documentation.

General Questions

1-1 Is a beneficial use the sole source of contamination and is that contamination localized around the beneficial use only? Beneficial uses include zinc within 0.3m of galvanized materials and soil within 0.3m of treated wood.

If NO or UNCERTAIN, then proceed to Question 1-2
If YES, then requirements for SRA1 have been met. No further assessment is required. Prepare SRA1 case narrative.

1-2 Is site contamination located in:

SEDIMENT (particulate material that usually lies below water – Sediment Criteria and Guidance, Protocol 19) ***OR*** *SURFACE WATER* (streams, rivers, lakes, estuaries, ocean or other water bodies as defined in Section 2.2.3 of the Tier 1 Ecological Risk Assessment Guidance, Protocol 1)

If NO, then proceed to Question 1-3
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-3 Has site contamination migrated to adjacent properties OR is fate and transport modeling required to determine the potential for migration to adjacent properties?

If NO, then proceed to Question 1-4
If YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-4 Is the contaminated portion of the property or areas to which contamination has migrated covered by a barrier including but not limited to: pavement/cement, buildings, that will prevent wildlife or human contact with the soil? The barrier must be permanent under current and foreseeable future conditions and must be maintained as such.

If NO or UNCERTAIN, then proceed to Question 1-5
If YES, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway

1-5 Are there areas (and media) with contaminant concentrations that are 10x the standards or areas containing 'special waste'?

IF NO, then proceed to Question 1-6
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-6 Are bioaccumulative contaminants located in or migrating to accessible media on the property? (Bioaccumulative contaminants defined as BAF ≥ 5,000 OR BCF ≥ 5,000 OR LogKow ≥ 5.0; BAF, BCF and Log Kow for subject contaminants must be obtained from peer reviewed literature)

IF NO, then proceed to Question 1-7
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

1-7 Is contamination located in or migrating to the upper 1m of soil?

IF NO, then proceed to the human exposure questionnaire (**Question 2-2**) and the ecological exposure questionnaire (**Question 3-2**) to investigate the groundwater pathway
IF UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site
IF YES, proceed to both the human and ecological exposure questionnaires

Human Exposure Questions

2-1 Are humans (e.g., trespassers, recreational users, workers, residents) participating in outdoor activities on the property or in areas adjacent to the property where generic soil or applicable human health protection "intake of contaminated soil" matrix standards are exceeded?

IF NO, then proceed to Question 2-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-2 Are humans living, or working in buildings located on the property or on adjacent properties?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-3

2-3 Are volatile contaminants present in subsurface media? (Volatile contaminants include analytes on United States Environmental Protection Agency, Volatile Organic Compounds Gas Chromatography/Mass Spectrometry Analyte List, Method 8260B)

IF NO, then proceed to Question 2-4
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

2-4 Are non-volatile contaminants in groundwater?

IF NO, then human health risk is acceptable, exit the Human Exposure Questionnaire
IF YES or UNCERTAIN, then proceed to Question 2-5

2-5 Is groundwater brackish and not used for drinking water?

IF NO or UNCERTAIN, then proceed to Question 2-6
IF YES, then human health risk is acceptable, exit the Human Exposure Questionnaire

2-6 Are drinking water wells or drinking water source waters located within 1.5 km of the property?

IF NO, then Exit Human Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

Ecological Exposure Questions

3-1 Is bare or vegetated soil available on the site?
(Landscaped areas on commercial or industrial sites in urban areas are excluded from ecological screening in SRA1; in addition soil or vegetation in planters (soil confined by a container or on top of a structure) or vegetation growing through a barrier (e.g. cracks in concrete) are excluded.)

IF NO, proceed to Question 3-2
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

3-2 Is groundwater contamination on the site within 1km of aquatic media?

IF NO, then ecological risk is acceptable, exit the Ecological Exposure Questionnaire
IF YES or UNCERTAIN, then SRA1 is not appropriate for the site, proceed to SRA2, DRA1, DRA2 or decide to remediate the site

8.0 SUMMARY

SRA1 provides assessors with a prescribed, stepwise methodology for evaluating sites that pose no unacceptable risk despite exceedances of generic numerical soil and water standards, matrix numerical standards or risk-based standards. The guidance is a component of the site assessment process and uses information gathered during the Site Investigation. The guidance applies to screening assessment activities that are completed after the completion of a PSI and DSI. The purpose of the guidance is to evaluate subject sites with contaminant concentrations exceeding generic numerical soil and water standards, matrix numerical standards or risk-based standards to determine if the exceedances may necessitate further review and completion of either a SRA2, DRA1, or DRA2 or remediation. A questionnaire is designed to walk an assessor through questions that are designed to indicate whether conditions at a site warrant further review because potentially complete exposure pathways and receptors may be present. Outcomes of the evaluation include:

1) further research is not required because answers in the questionnaire indicate that there are no complete exposure pathways that require further evaluation and this aspect of the evaluation can be terminated for either human health exposures, ecological exposures or both human and ecological exposures; or

2) there are complete exposure pathways that warrant further evaluation.

Completion of SRA1 requires the development of a conceptual model, completion of the questionnaire and preparation of a summary narrative.

9.0 REFERENCES

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