

APPENDIX 3

Atlantic RBCA Version 3

ATLANTIC CANADA TIER I

RISK-BASED SCREENING LEVEL (RBSL) TABLE

ATLANTIC PARTNERSHIP IN RBCA IMPLEMENTATION

September, 2015

Appendix 3 - Atlantic RBCA Version 3 ATLANTIC CANADA TIER I RISK BASED SCREENING LEVEL (RBSL) TABLE

			Compound of Concern								
Land Lico	Groundwater Lleo	Soil Turpa			Ethyl- benzene	Xylene	Modified TPH (TPH-BTEX)				
Land Use	Groundwater Use	Son Type	Benzene	Toluene			Gasoline	Diesel/ No. 2 Fuel Oil	No. 6 Oil/ Lube Oil		
	Detable	Coarse Grained	0.042	0.35	0.043	0.73	74	270	1,100		
Agricultural	Folable	Fine Grained	0.094	0.74	0.089	1.5	1,900	4,700	10,000		
Agricultural	Non Dotable	Coarse Grained	0.099	77	30	8.8	74	270	1,100		
	Non-Polable	Fine Grained	2.3	10,000	9,300	210	2,100	8,600	10,000		
Residential	Potable	Coarse Grained	0.042	0.35	0.043	0.73	74	270	1,100		
		Fine Grained	0.094	0.74	0.089	1.5	1,900	4,700	10,000		
	Non-Potable	Coarse Grained	0.099	77	30	8.8	74	270	1,100		
		Fine Grained	2.3	10,000	9,300	210	2,100	8,600	10,000		
	Potable	Coarse Grained	0.042	0.35	0.043	0.73	870	1,800	10,000		
Commercial		Fine Grained	0.094	0.74	0.089	1.5	1900	4,700	10,000		
Commercial	Non Dotoble	Coarse Grained	2.5	10,000	10,000	110	870	4,000	10,000		
	Non-Polable	Fine Grained	33	10,000	10,000	10,000	10,000	10,000	10,000		
	Detable	Coarse Grained	0.042	0.35	0.043	0.73	870	1,800	10,000		
Industrial	Polable	Fine Grained	0.094	0.74	0.089	1.5	1,900	4,700	10,000		
inuustriai	Non Potabla	Coarse Grained	2.5	10,000	10,000	110	870	4,000	10,000		
	Non-Fotable	Fine Grained	33	10,000	10,000	10,000	10,000	10,000	10,000		
Posidual Saturation (PES) Coarse Grained		Coarse Grained	890	450	240	340	TBD	TBD	TBD		
Residual Saturation (RES)		Fine Grained	1000	480	250	360	TBD	TBD	TBD		

TABLE 4a - TIER I RISK BASED SCREENING LEVELS FOR SOIL (mg/kg)

Notes:

1. Upper Concentration Limit (UCL) of 10,000 mg/kg is applied to any calculated soil concentration that is >RES or exceeds 10,000 mg/kg.

2. RES values for TPH to be determined (TBD).

3. The numbers in this table are based on the protection of human health. While these concentrations may not be physically realistic in the environment, it remains that the models indicate that chemicals present in the soil at concentrations below these values do not present a potential concern for human health if exposure occurs through the specified pathway.

4. Concentrations >RES are considered an indicator of the potential presence of free product. If site concentrations are >RES, the presence of free product must be specifically addressed by the Site Professional.

To apply the RBSL values in the Tier I Soil and Groundwater Tables, the following mandatory criteria must be satisfied.

a. Non-aqueous phase liquids must not be present in groundwater.

b. Potable water must be free of objectionable taste and odour.

c. Soils must not contain liquid and/or free petroleum product.

d. Residual hydrocarbons must not create objectionable odours or explosive conditions in indoor or outdoor air.

e. Surface soils must not be stained.

f. The site characteristics and exposure scenarios must be compatible with the Atlantic RBCA default values.

Updated January 2015

			Compound of Concern								
Receptor	Groundwater Use	Soil Type			Ethyl-		Modi	fied TPH (TPH-BT Diesel/ No. 2 Fuel Oil 3.2 3.2 20 20 3.2 3.2 20 3.2 3.2 3.2 3.2 3.2 3.2 20 20 20 20 20 3.2 20 3.2 3.2 3.2 3.2 3.2 3.2 3.2 20 3.2 20 3.2 20 3.2 20 3.2 3.2 3.2 3.2 3.2 3.2 20 3.2 3.2 3.2 20	TEX)		
•			Benzene Toluene	benzene	Xylene	Gasoline	Diesel/ No. 2 Fuel Oil	No. 6 Oil/ Lube Oil			
	Potoblo	Coarse Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
A	Fotable	Fine Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
Agricultural	Non Botabla	Coarse Grained	2.6	20	20	20	20	20	20		
	Non-Polable	Fine Grained	13	20	20	20	20	20	20		
Residential	Potable	Coarse Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
		Fine Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
	Non-Potable	Coarse Grained	2.6	20	20	20	20	20	20		
		Fine Grained	13	20	20	20	20	20	20		
	Potable	Coarse Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
Commoraial		Fine Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
Commercial	Non Potablo	Coarse Grained	20	20	20	20	20	20	20		
	NOII-POLADIe	Fine Grained	20	20	20	20	20	20	20		
	Potabla	Coarse Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
Inductrial	Polable	Fine Grained	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
industrial	Non Botabla	Coarse Grained	20	20	20	20	20	20	20		
	Non-Polable	Fine Grained	20	20	20	20	20	20	20		
	Solubility (SOL)		1,780	515	150	160	TBD	TBD	TBD		

TABLE 4b - TIER I RISK BASED SCREENING LEVELS FOR GROUNDWATER (mg/L)

Notes:

1. Upper Concentration Limit (UCL) of 20 mg/L is applied to any calculated concentration that is >SOL or exceeds 20 mg/L.

2. SOL values for TPH to be determined (TBD).

3. The numbers in this table are based on the protection of human health. While these concentrations may not be physically realistic in the environment, it remains that the models indicate that chemicals present in the groundwater at concentrations below these values do not present a potential concern for human health if exposure occurs through the specified pathway.

4. Concentrations >SOL are considered an indicator of the potential presence of free product. If site concentrations are >SOL, the presence of free product must be specifically addressed by the Site Professional.

To apply the RBSL values in the Tier I Soil and Groundwater Tables, the following mandatory criteria must be satisfied.	
a. Non-aqueous phase liquids must not be present in groundwater.	
b. Potable water must be free of objectionable taste and odour.	
c. Soils must not contain liquid and/or free petroleum product.	
d. Residual hydrocarbons must not create objectionable odours or explosive conditions in indoor or outdoor air.	
e. Surface soils must not be stained.	
f. The site characteristics and exposure scenarios must be compatible with the Atlantic RBCA default values.	Updated September 2015



APPENDIX 4

Atlantic RBCA Version 3

ATLANTIC CANADA TIER II

PATHWAY-SPECIFIC SCREENING LEVEL (PSSL) TABLE

ATLANTIC PARTNERSHIP IN RBCA IMPLEMENTATION

September, 2015

TABLE 5a - TIER II PATHWAY SPECIFIC SCREENING LEVELS FOR SOIL (mg/kg)

				Compound of Concern							
Receptor	Groundwater		Evenesure Dethurov					Modified TPH (TPH-BTEX)			
Receptor	Use	Son Type		Benzene	Toluene	Ethyl- benzene	Xylene	Gasoline	Modified TPH (TPH-BT Sasoline Diesel/No. 2 Fuel Oil 74 270 15,000 8,600 940 1,800 2,100 10,000 15,000 8,600 14 270 15,000 8,600 1,900 4700 74 270 15,000 8,600 Scenarios 3 74 270 15,000 8,600 500 8,600 15,000 8,600 940 1,800 2,100 10,000 15,000 8,600 15,000 8,600 1900 4700 74 270 15,000 8,600 1900 4700 74 270 15,000 8,600 1900 4700 74 270 15,000 8,600 2,100 10,000 15,000 8,600 </th <th>No. 6 Oil/ Lube Oil</th>	No. 6 Oil/ Lube Oil	
		Coarse	Indoor Air *	0.099	77	30	8.8	74	270	1,100	
		Grainod	Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
	Potablo	Graineu	Soil Leaching	0.042	0.35	0.043	0.73	940	1,800	15,000	
_	Fotable		Indoor Air *	2.3	>RES	>RES	210	2,100	10,000	60,000	
rral		Fine Grained	Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
lt			Soil Leaching	0.094	0.74	0.089	1.5	1,900	4700	>RES	
Li <u>c</u>		Coarse Grained	Indoor Air *	0.099	77	30	8.8	74	270	1,100	
Agi	Non-Potable		Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
			Soil Leaching	Not Applicable for Non-Potable Scenarios							
		Fine Grained	Indoor Air *	2.3	>RES	>RES	210	2,100	10,000	60,000	
			Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
			Soil Leaching	Not Applicable for Non-Potable Scenarios							
		Coarse Grained	Indoor Air *	0.099	77	30	8.8	74	270	1,100	
			Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
	Potablo		Soil Leaching	0.042	0.35	0.043	0.73	940	1,800	15,000	
_	Fotable	Fine Grained	Indoor Air *	2.3	>RES	>RES	210	2,100	10,000	60,000	
tial			Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
en			Soil Leaching	0.094	0.74	0.089	1.5	1900	4700	>RES	
sid		Coarse	Indoor Air *	0.099	77	30	8.8	74	270	1,100	
Re		Grainod	Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
	Non-Potablo	Graineu	Soil Leaching			Not Applicab	le for Non-Pota	ble Scenarios			
	Non-Folable		Indoor Air *	2.3	>RES	>RES	210	2,100	10,000	60,000	
		Fine Grained	Soil Ingestion	66	20,000	9,300	140,000	15,000	8,600	14,000	
			Soil Leaching			Not Applicab	le for Non-Pota	ble Scenarios			
Re	sidual Saturation	Coar	se Grained	890	450	240	340	TBD	TBD	TBD	
		Fine Grained		1000	480	250	360	TBD	TBD	TBD	

Notes:

1. * 10 X Adjustment Factor (AF) has been applied.

2. RES values for TPH to be determined (TBD).

3. The numbers in this table are based on the protection of human health. While these concentrations may not be physically realistic in the environment, it remains that the models indicate that chemicals present in the soil at concentrations below these values do not present a potential concern for human health if exposure occurs through the specified pathway.

4. Concentrations >RES are considered an indicator of the potential presence of free product. If site concentrations are >RES, the presence of free product must be specifically addressed by the Site Professional.

To apply the PSSL values in the Tier II Soil and Groundwater Tables, the following mandatory criteria must be satisfied.

a. Non-aqueous phase liquids must not be present in groundwater.

b. Potable water must be free of objectionable taste and odour.

c. Soils must not contain liquid and/or free petroleum product.

d. Residual hydrocarbons must not create objectionable odours or explosive conditions in indoor or outdoor air.

e. Surface soils must not be stained.

. The site characteristics and exposure scenarios must be compatible with the Atlantic RBCA default values.

Updated September 2015

TABLE 5a - TIER II PATHWAY SPECIFIC SCREENING LEVELS FOR SOIL (mg/kg)

				Compound of Concern							
Receptor Gro	Groundwater		Evene avera Dathway					Modified TPH (TPH-BTEX)			
Receptor	Use	Son Type	Exposure Fattiway	Benzene	Toluene	Ethyl- benzene	Xylene	Gasoline	odified TPH (TPH-B' ⇒ Diesel/No. 2 Fuel Oil 4,000 13,000 13,000 1,800 >RES 13,000 4,700 4,700 4,000 13,000 9 PRES 13,000 4,700 13,000 13,000 ios >RES 13,000 1,800 ios >RES 4,000 4,7,000 4,700 4,700 4,700 4,700 4,700 8,000 ×RES 47,000 ×RES 47,000 ×RES 47,000 ×RES 47,000	No. 6 Oil/ Lube Oil	
		Coaroo	Indoor Air *	2.5	>RES	>RES	110	870	4,000	23,000	
		Grainad	Soil Ingestion	360	31,000	14,000	210,000	22,000	13,000	21,000	
	Potablo	Graineu	Soil Leaching	0.042	0.35	0.043	0.73	940	1,800	15,000	
_	Folable		Indoor Air *	33	>RES	>RES	>RES	78,000	>RES	>RES	
cia		Fine Grained	Soil Ingestion	360	31,000	14,000	210,000	22,000	13,000	21,000	
Jer			Soil Leaching	0.094	0.74	0.089	1.5	1900	4,700	>RES	
nn		Coarse Grained	Indoor Air *	2.5	>RES	>RES	110	870	4,000	23000	
00	Non-Potable		Soil Ingestion	360	31,000	14,000	210,000	22,000	13,000	21,000	
U			Soil Leaching	Not Applicable for Non-Potable Scenarios							
		Fine Grained	Indoor Air *	33	>RES	>RES	>RES	78,000	>RES	>RES	
			Soil Ingestion	360	31,000	14,000	210,000	22,000	13,000	21,000	
			Soil Leaching	Not Applicable for Non-Potable Scenarios							
		Coarse Grained	Indoor Air *	2.5	>RES	>RES	110	870	4,000	23,000	
			Soil Ingestion	360	110,000	49,000	730,000	77,000	47,000	74,000	
	Potablo		Soil Leaching	0.042	0.35	0.043	0.73	940	1,800	15,000	
	Fotable	Fine Grained	Indoor Air *	33	>RES	>RES	>RES	78,000	>RES	>RES	
al			Soil Ingestion	360	110,000	49,000	730,000	77,000	47,000	74,000	
str			Soil Leaching	0.094	0.74	0.089	1.5	1900	4,700	>RES	
np		Coarse	Indoor Air *	2.5	>RES	>RES	110	870	4,000	23,000	
Ч		Grainod	Soil Ingestion	360	110,000	49,000	730,000	77,000	47,000	74,000	
	Non-Potablo	Grained	Soil Leaching			Not Applicab	le for Non-Pota	ble Scenarios			
	Non-Folable		Indoor Air *	33	>RES	>RES	>RES	78,000	>RES	>RES	
		Fine Grained	Soil Ingestion	360	110,000	49,000	730,000	77,000	47,000	74,000	
			Soil Leaching			Not Applicab	le for Non-Pota	ble Scenarios			
Re	sidual Saturation	Coar	se Grained	890	450	240	340	TBD	TBD	TBD	
		Fine Grained		1000	480	250	360	TBD	TBD	TBD	

Notes:

1. * 10 X Adjustment Factor (AF) has been applied.

2. RES values for TPH to be determined (TBD).

3. The numbers in this table are based on the protection of human health. While these concentrations may not be physically realistic in the environment, it remains that the models indicate that chemicals present in the soil at concentrations below these values do not present a potential concern for human health if exposure occurs through the specified pathway.

4. Concentrations >RES are considered an indicator of the potential presence of free product. If site concentrations are >RES, the presence of free product must be specifically addressed by the Site Professional.

To apply the PSSL values in the Tier II Soil and Groundwater Tables, the following mandatory criteria must be satisfied.

a. Non-aqueous phase liquids must not be present in groundwater.

b. Potable water must be free of objectionable taste and odour.

c. Soils must not contain liquid and/or free petroleum product.

d. Residual hydrocarbons must not create objectionable odours or explosive conditions in indoor or outdoor air.

e. Surface soils must not be stained

. The site characteristics and exposure scenarios must be compatible with the Atlantic RBCA default values.

Updated September 2015

						C	Compound of	Concern	Concern					
Descriter	Groundwater		Exposure					Mod	ified TPH (TPH-B	TEX)				
Receptor	Use	Soil Type	Pathway	Benzene	Toluene	Ethyl- benzene	Xylene	Gasoline	Diesel/ No. 2 Fuel Oil	No. 6 Oil/ Lube Oil				
		Coarse	Indoor Air *	2.6	>SOL	>SOL	68	34	200	1,100				
	Detable	Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8				
Ira	Folable	Fine	Indoor Air *	13	>SOL	>SOL	330	2,100	30,000	>SOL				
ıltı		Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8				
rict	Non-Potable	Coarse	Indoor Air *	2.6	>SOL	>SOL	68	34	200	1100				
Agı		Grained	Ingestion	Not Applicable for Non-Potable Scenarios										
		Fine	Indoor Air *	13	>SOL	>SOL	330	2,100	30,000	>SOL				
		Grained	Ingestion	Not Applicable for Non-Potable Scenarios										
		Coarse	Indoor Air *	2.6	>SOL	>SOL	68	34	200	1100				
	Potoblo	Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8				
tial	Polable	Fine	Indoor Air *	13	>SOL	>SOL	330	2,100	300,000	>SOL				
eni		Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8				
sid		Coarse	Indoor Air *	2.6	>SOL	>SOL	68	34	200	1,100				
Re	Non Potable	Grained	Ingestion			Not Applic	able for Non	Potable Scena	rios					
	NOII-FOLADIE	Fine	Indoor Air *	13	>SOL	>SOL	330	2,100	30,000	>SOL				
		Grained	Ingestion			Not Applic	able for Non-	Potable Scena	rios					
Solubility'				1780	515	150	160	TBD	TBD	TBD				

TABLE 5b - TIER II PATHWAY SPECIFIC SCREENING LEVELS FOR GROUNDWATER (mg/L)

Notes:

1. * 10 X Adjustment Factor (AF) has been applied.

2. SOL values for TPH to be determined (TBD).

3. The numbers in this table are based on the protection of human health. While these concentrations may not be physically realistic in the environment, it remains that the models indicate that chemicals present in the groundwater at concentrations below these values do not present a potential concern for human health if exposure occurs through the specified pathway.

4. Concentrations >SOL are considered an indicator of the potential presence of free product. If site concentrations are >SOL, the presence of free product must be specifically addressed by the Site Professional.

To apply the PSSL values in the Tier II Soil and Groundwater Tables, the following mandatory criteria must be satisfied.

a. Non-aqueous phase liquids must not be present in groundwater.

b. Potable water must be free of objectionable taste and odour.

c. Soils must not contain liquid and/or free petroleum product.

d. Residual hydrocarbons must not create objectionable odours or explosive conditions in indoor or outdoor air.

e. Surface soils must not be stained.

f. The site characteristics and exposure scenarios must be compatible with the Atlantic RBCA default values.

Updated January 2015

						C	ompound of	Concern				
Receptor	Groundwater		Exposure					Mod	ified TPH (TPH-B	TEX)		
	Use	Soil Type	Pathway	Benzene	Toluene	Ethyl- benzene	Xylene	Gasoline	Diesel/ No. 2 Fuel Oil	No. 6 Oil/ Lube Oil		
		Coarse	Indoor Air *	30	>SOL	>SOL	390	3,700	39,000	>SOL		
	Detable	Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
cial	Polable	Fine	Indoor Air *	150	>SOL	>SOL	>SOL	>SOL	>SOL	>SOL		
lero		Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
u u u	Non-Potable	Coarse	Indoor Air *	30	>SOL	>SOL	390	3,700	39,000	>SOL		
Cor		Grained	Ingestion	Not Applicable for Non-Potable Scenarios								
Ŭ		Fine	Indoor Air *	150	>SOL	>SOL	>SOL	>SOL	>SOL	>SOL		
		Grained	Ingestion	Not Applicable for Non-Potable Scenarios								
		Coarse	Indoor Air *	30	>SOL	>SOL	390	3,700	39,000	>SOL		
	Potoblo	Grained	Ingestion	150	0.024	0.0016	0.02	4.4	3.2	7.8		
a	Polable	Fine	Indoor Air *	140	>SOL	>SOL	>160	>SOL	>SOL	>SOL		
stri		Grained	Ingestion	0.005	0.024	0.0016	0.02	4.4	3.2	7.8		
np		Coarse	Indoor Air *	30	>SOL	>SOL	390	3,700	39,000	>SOL		
<u>n</u>	Non-Potable	Grained	Ingestion			Not Applic	able for Non-	Potable Scena	rios			
	NOII-FOLADIE	Fine	Indoor Air *	150	>SOL	>SOL	>SOL	>SOL	>SOL	>SOL		
		Grained	Ingestion			Not Applic	able for Non-	Potable Scena	arios			
		Solubility'	1780	515	150	160	TBD	TBD	TBD			

TABLE 5b - TIER II PATHWAY SPECIFIC SCREENING LEVELS FOR GROUNDWATER (mg/L)

Notes:

1. * 10 X Adjustment Factor (AF) has been applied.

2. SOL values for TPH to be determined (TBD).

3. The numbers in this table are based on the protection of human health. While these concentrations may not be physically realistic in the environment, it remains that the models indicate that chemicals present in the groundwater at concentrations below these values do not present a potential concern for human health if exposure occurs through the specified pathway.

4. Concentrations >SOL are considered an indicator of the potential presence of free product. If site concentrations are >SOL, the presence of free product must be specifically addressed by the Site Professional.

To apply the PSSL values in the Tier II Soil and Groundwater Tables, the following mandatory criteria must be satisfied.

a. Non-aqueous phase liquids must not be present in groundwater.

b. Potable water must be free of objectionable taste and odour.

c. Soils must not contain liquid and/or free petroleum product.

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