

HOT SPOT ASSESSMENT DIAGNOSTIC TOOL FOR SIDS GEF IWCAM/CEHI





Rapid Watershed Hot-Spot Risk Assessment Tool

North western Coastal Water Quality Demonstration Project for St. Lucia

Introduction and Instructions for Use

The purpose of this assessment tool is to capture information on the pollution risk associated with hotspots **Hotspots are sites which are likely to be sources of physical, chemical and biological pollutants which can enter drains and rivers, to be ultimately discharged to coastal waters along the northwest coast of the island.** The scores from this risk assessment tool will prioritize sites for further detailed investigation and intervention towards better coastal water quality and overall environmental protection.

This is a rapid assessment tool, to capture maximum information within minimum time, and simple enough that the field personnel will not require extensive training on its use. It is also designed to minimize subjectivity, hence is structured on the basis of presence/absence of specific pollution criteria rather than surveyor judgment.

Section 1 is to be completed for all sites, Section 2 only if the site is industrial/commercial, and complete Section 3 for residential, commercial and industrial sites. Section 4 is to be completed for agricultural sites. If there is mixed landuse at the site e.g. both agriculture and housing, all applicable sections must be filled out.

Key variables that relate to pollution potential are weighted and ranked to produce a hotspot assessment score. The higher the likelihood the variable will contribute to freshwater and coastal pollution the higher the weighting. For example soil/land degradation is considered to be a greater water pollution risk factor than solid waste hence the former has a weighting of 9 and the latter only 6. The level of magnitude of each variable in turn is ranked from 1-15, so for example for solid waste pollution if the site has “No trash or very little trash present (i.e. less than one bucketful)” the rank is only **1 but if the site has** “A large amount of trash or debris scattered over a large area” the solid waste ranking is 10. Thus a site with no trash, will have a solid waste risk score of $1 \times 6 = 6$. Weighting, rank and final score columns have already been provided in the table below. This is the field version of the form for manual entry of the scores, there is also a Microsoft Excel version of the form which can be used in the field on a laptop for example or into which the scores can be entered after the field assessment.

Organization name: _____ Interviewee name: _____

Interviewer name: _____ Date: _____ Start time: _____

SECTION 1: GENERAL DESCRIPTION				WEIGH-TING	RANK	SCORE
1.1 WATERSHED NAME	1.2 MAIN DISCHARGE POINTS			N/A FOR REFERENCE ONLY		
	(A) LOCATIONAL (GPS) COORDINATES		(B) DESCRIPTION (provide for each discharge outfall)			
	#	EASTING S	NORTHINGS			
	1					
	2					
1.3 PHOTO ID (Camera-Pic #s)		1.4 SITE IDENTIFYING CHARACTERISTICS (e.g. address, major landmarks, light pole number)		N/A FOR REFERENCE ONLY		
#	PHOTO #	DESCRIPTION				
1						
2						
1.5 MAJOR LAND USE/LAND COVER (Adapted from Cooper 1996)				N/A FOR REFERENCE ONLY		
<input type="checkbox"/> Residential <input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input type="checkbox"/> Agricultural <input type="checkbox"/> Natural vegetation (e.g. forest, savannah) <input type="checkbox"/> Vacant lot/abandoned area/open space						
1.6 TOPOGRAPHY				WEIGH-TING	RANK	SCORE
<input type="checkbox"/> Gradient flat to gentle sloping (0-10 degrees) (2) <input type="checkbox"/> Gradient gentle to moderate sloping (10-20 degrees) (5) <input type="checkbox"/> Gradient moderate to steeply sloping (20+ degrees) (8)				6		
1.7 PROXIMITY TO WATERCOURSES				WEIGH-TING	RANK	SCORE
<input type="checkbox"/> Manmade drain or stream (<3m in width) on property or within 10m of property boundary (5) <input type="checkbox"/> Channelized water course, river or dry riverbed (>3m in width) on property or within 10m of property boundary (8) <input type="checkbox"/> Property on coastline, on beach or within 10m of coastline or beach (8) <input type="checkbox"/> Property is adjacent to multiple water courses e.g. both on the coastline and next to a river (15)				10		

<p>1.8 WATERCOURSE VEGETATION BUFFERS (if edge of property is within 10m of the coastline or within 10m of river, dry riverbed or concrete drain >3m in width)</p> <p><input type="checkbox"/> Adjacent or onsite river or drain has a continuous vegetation strip (trees and/or ground vegetation) >20m wide extending from bank towards hotspot (0)</p> <p><input type="checkbox"/> Adjacent or onsite river or drain has a continuous or patchy vegetation strip (trees and/or ground vegetation) < 20m wide extending from bank towards hotspot (5)</p> <p><input type="checkbox"/> Adjacent or onsite river or drain does not have a continuous vegetation strip (trees and/or ground vegetation) the bank of the watercourse towards hotspot (10)</p>	WEIGH -TING	RANK	SCORE
<p>1.9 SITE ACTIVITIES (if edge of property is within 10m of coastline, beach, river, dry riverbed or concrete drain >3m in width)</p> <p><input type="checkbox"/> Mining/quarrying (sand mining, rock quarry, etc) (15)</p> <p><input type="checkbox"/> Laundry (6)</p> <p><input type="checkbox"/> Grazing animals (3)</p> <p><input type="checkbox"/> Material stockpiling e.g. for roadworks (4)</p> <p><input type="checkbox"/> Warehousing (2)</p> <p><input type="checkbox"/> OTHER PLEASE SPECIFY:</p> <p><input type="checkbox"/> Car washing/vehicle maintenance (7)</p> <p><input type="checkbox"/> Recreational e.g. bathing camping hiking (3)</p> <p><input type="checkbox"/> Forestry e.g. logging (2)</p> <p><input type="checkbox"/> Land shaping/reclamation/soil movement (17)</p> <p><input type="checkbox"/> Treatment and disposal (15)</p>	WEIGH -TING	RANK	SCORE
<p>1.10 EVIDENCE OF SOIL/LAND DEGRADATION (Adapted from Ontario Ministry of Environment 2010)</p> <p><input type="checkbox"/> No evidence of soil degradation (no or little exposed soil) (1)</p> <p><input type="checkbox"/> Exposed soil visible, no rills or gullies evident (3)</p> <p><input type="checkbox"/> Exposed soil visible. Rills evident (small erosion channels in the soil running downslope) (7)</p> <p><input type="checkbox"/> Exposed soil visible with marked signs of erosion that may include gullies, exposed plant roots, exposed bases of fences, poles and other structures. If the site is at riverbank, stream bank failure may be evident (10)</p>	WEIGH -TING	RANK	SCORE
<p>1.9 EVIDENCE OF SOLID WASTE POLLUTION (Adapted from Kitchell and Schueler 2004)</p> <p><input type="checkbox"/> No trash or very little trash present (i.e. less than one bucketful) (1)</p> <p><input type="checkbox"/> Small amount of trash (i.e., less than one pickup truck load) (3)</p> <p><input type="checkbox"/> Large amount of trash, or bulk items, in clustered dumping pattern. Trash may have been dumped over a long period of time but it could be cleaned up in a few days, possibly with a small backhoe. (7)</p> <p><input type="checkbox"/> A large amount of trash or debris scattered over a large area (10)</p>	WEIGH -TING	RANK	SCORE
SECTION 1 SUBTOTAL SCORE (SUM OF SCORES FROM 1.6-1.9):			

SECTION 2: COMPLETE FOR INDUSTRIAL AND COMMERCIAL SITES	WEIGH-TING	RANK	SCORE
<p>2.1 ECONOMIC SECTOR (Adapted from Trinidad and Tobago Standard Industrial Classification)</p> <p> <input type="checkbox"/> Construction <input type="checkbox"/> Electricity and water <input type="checkbox"/> Manufacturing <input type="checkbox"/> Mining/quarrying <input type="checkbox"/> Transport, storage and communications <input type="checkbox"/> Agroprocessing <input type="checkbox"/> Fish processing </p> <p> <input type="checkbox"/> Industrial washing/cleaning <input type="checkbox"/> Retail and wholesale trade, hotel and restaurants <input type="checkbox"/> Financing, insurance real estate and business service <input type="checkbox"/> Recreational and cultural services <input type="checkbox"/> Community, social and personal services </p> <p><input type="checkbox"/> OTHER PLEASE SPECIFY :</p>	N/A FOR GENERAL INFORMATION ONLY		
<p>2.2 SITE SECURITY</p> <p>Is there a fence or security measures which limits access and therefore reduces the chance of tampering/vandalism that may lead to chemical spillages or other forms of pollution?</p> <p><input type="checkbox"/> Yes (1) <input type="checkbox"/> No (8)</p>	WEIGH-TING 2	RANK	SCORE
<p>2.3 CHEMICAL PRODUCTION</p> <p>Are the following substances produced at the site?</p> <p> <input type="checkbox"/> Compressed gas cylinders, industrial gases (4) <input type="checkbox"/> Petrochemical products (e.g. oils, gasoline (8) <input type="checkbox"/> Paint, pigments, inks, glues, resins (2) <input type="checkbox"/> Acid, solvents (3) <input type="checkbox"/> Agricultural chemicals (pesticides and fertilizers (4) <input type="checkbox"/> Soaps, detergents (1) </p> <p>If other materials manufactured please specify below:</p>	WEIGH-TING 8	RANK SUMMED RANK OF ALL SUBSTANCES PRODUCED	SCORE

<p>2.4 CHEMICAL STORAGE</p> <p>Are the following substances stored at the site?</p> <p><input type="checkbox"/> Compressed gas cylinders, industrial gases (2) <input type="checkbox"/> Petrochemical products (e.g. oils, gasoline) (8)</p> <p><input type="checkbox"/> Paint, pigments, inks, glues, resins (2) <input type="checkbox"/> Acid, solvents (3)</p> <p><input type="checkbox"/> Agricultural chemicals (pesticides and fertilizers) (4) <input type="checkbox"/> Soaps, detergents (1)</p> <p>If other materials are stored please specify below:</p>	WEIGHTING	RANK <small>SUMMED RANK OF ALL SUBSTANCES PRODUCED</small>	SCORE
	1		
<p>2.5. SITE ENVIRONMENTAL MANAGEMENT PRACTICES</p> <p>a) Is there a documented Environmental Management System or Plan or policy in place</p> <p><input type="checkbox"/> Yes (0) <input type="checkbox"/> No (5)</p>	WEIGHTING	RANK	SCORE
	2		
<p>2.5. SITE ENVIRONMENTAL MANAGEMENT PRACTICES</p> <p>b) Is there a documented Waste Management System or Plan or Policy in place</p> <p><input type="checkbox"/> Yes (0) <input type="checkbox"/> No (5)</p>	WEIGHTING	RANK	SCORE
	2		
<p>2.5. SITE ENVIRONMENTAL MANAGEMENT PRACTICES</p> <p>c) Are there measures in place to reduce chemical contamination risk or control surface, ground, and runoff water impacts e.g. special storage arrangements (does not have to be documented)</p> <p><input type="checkbox"/> Yes (0) <input type="checkbox"/> No (5)</p>	WEIGHTING	RANK	SCORE
	2		
SECTION 1 SUBTOTAL SCORE (SUM OF SCORES FROM 2.2-2.5):			

SECTION 3 : COMPLETE FOR RESIDENTIAL, INSTITUTIONAL, COMMERCIAL AND INDUSTRIAL SITES			
3.1 SEWAGE a) If sewage is generated- please indicate the type of collection or treatment <input type="checkbox"/> Package Sewage Treatment Facility or other on-site treatment facility (3) <input type="checkbox"/> Connected to municipal sewage treatment facility (4) <input type="checkbox"/> Septic Tank (6) <input type="checkbox"/> Pit latrine (8) <input type="checkbox"/> Open defecation/septage (15) <input type="checkbox"/> Other please specify:	WEIGHTING	RANK	SCORE
	8		
3.1 SEWAGE b) Is the facility occupied on a daily basis by <input type="checkbox"/> < 50 persons (4) <input type="checkbox"/> > 50 persons (9)	WEIGHTING	RANK	SCORE
	2		
3.1 SEWAGE c) If there is outfall or discharge to drain or watercourse from the sewage treatment facility please describe the discharge characteristics below: <input type="checkbox"/> Outfall does not have dry weather discharge; staining; or appearance of causing any erosion problems at the point of discharge (1) <input type="checkbox"/> Relatively small volume discharge; flow mostly clear and odorless. If the discharge has a color and/or odor, the amount of discharge appears small compared to the stream's/drain's baseflow (5) <input type="checkbox"/> Relatively large volume discharge having a distinct color and/or a strong odor. The amount of discharge is significant compared to the amount of normal flow in receiving stream/drain (9)	WEIGHTING	RANK	SCORE
	9		
3.2 GREYWATER a) If greywater is generated, please indicate the type of collection or treatment <input type="checkbox"/> Package Sewage Treatment Facility or other on-site treatment facility (3) <input type="checkbox"/> Connected to municipal sewage treatment facility (4) <input type="checkbox"/> Preliminary/partial waste treatment then discharged to drain or water course (6) <input type="checkbox"/> Waste discharged to drain or watercourse without treatment or disposal (9) <input type="checkbox"/> Other, please specify	WEIGHTING	RANK	SCORE
	6		
3.2 GREYWATER b) Is the facility occupied on a daily basis by <input type="checkbox"/> < 50 persons (4) <input type="checkbox"/> > 50 persons (9)	WEIGHTING	RANK	SCORE
	4		

3.2 GREYWATER c)If the greywater is discharged to drain or watercourse please describe the discharge characteristics below <input type="checkbox"/> Outfall does not have dry weather discharge; staining; or appearance of causing any erosion problems at the point of discharge (1) <input type="checkbox"/> Relatively small volume discharge; flow mostly clear and odorless. If the discharge has a color and/or odor, the amount of discharge appears small compared to the stream's/drain's baseflow (5) <input type="checkbox"/> Relatively large volume discharge having a distinct color and/or a strong odor. The amount of discharge is significant compared to the amount of normal flow in receiving stream/drain (9)	WEIGHTING	RANK	SCORE
	8		
3.3 CHEMICAL WASTEWATER a) If chemical wastewater is generated, please indicate type of collection or treatment <input type="checkbox"/> Package Sewage Treatment Facility or other on-site treatment facility (3) <input type="checkbox"/> Connected to municipal sewage treatment facility (4) <input type="checkbox"/> Preliminary/partial waste treatment then discharged to drain or water course (6) <input type="checkbox"/> Waste discharged to drain or watercourse without treatment or disposal (9) <input type="checkbox"/> Other, please specify	WEIGHTING	RANK	SCORE
	8		
3.3 CHEMICAL WASTEWATER b)If the chemical wastewater is discharged to drain or watercourse please describe the discharge characteristics below <input type="checkbox"/> Outfall does not have dry weather discharge; staining; or appearance of causing any erosion problems at the point of discharge (1) <input type="checkbox"/> Relatively small volume discharge; flow mostly clear and odorless. If the discharge has a color and/or odor, the amount of discharge appears small compared to the stream's/drain's baseflow (5) <input type="checkbox"/> Relatively large volume discharge having a distinct color and/or a strong odor. The amount of discharge is significant compared to the amount of normal flow in receiving stream/drain (9)	WEIGHTING	RANK	SCORE
	8		
3.3 CHEMICAL WASTEWATER c)Is the chemical wastewater generated <input type="checkbox"/> occasionally (4) <input type="checkbox"/> daily (9)	WEIGHTING	RANK	SCORE
	2		
3.3 CHEMICAL WASTEWATER d)Is the facility <input type="checkbox"/> < 3000 sq ft (4) <input type="checkbox"/> > 3000sq ft (9)	WEIGHTING	RANK	SCORE
	2		
SECTION 3 SUBTOTAL SCORE (SUM OF SCORES FROM 3.1-3.3):			

SECTION 4 : COMPLETE FOR AGRICULTURAL SITES (NOTE: use this section only if there is active agriculture; abandoned estates and fallow land are not applicable)	WEIGHTING	RANK	SCORE
4.1 GENERAL AGRICULTURAL ACTIVITY DESCRIPTION a) Type of agriculture <input type="checkbox"/> Livestock <input type="checkbox"/> Crops <input type="checkbox"/> Mixed <input type="checkbox"/> Aquaculture Please elaborate below:	N/A DESCRIPTION ONLY		
4.1 GENERAL AGRICULTURAL ACTIVITY DESCRIPTION b) For sites with crops please indicate the scale of operations (Adapted from St. Lucia Ministry of Agriculture Land holding designations) <input type="checkbox"/> Small subsistence <1 acre <input type="checkbox"/> Large subsistence >1 acre <input type="checkbox"/> Small commercial < 5 acres <input type="checkbox"/> Large commercial > 5 acres e.g. plantation/estate	N/A DESCRIPTION ONLY		
4.1 GENERAL AGRICULTURAL ACTIVITY DESCRIPTION For livestock operations please describe type below <input type="checkbox"/> Free range animals (2) <input type="checkbox"/> Animals in pens/cages (intensive rearing) (10)	WEIGHTING	RANK	SCORE
4.2. LIVESTOCK REARING INTENSITY (WHERE HAVE INTENSIVE REARING: ANIMALS IN PENS/CAGES) a) Pigs: number of sows in unit: _____	5		
4.2. LIVESTOCK REARING INTENSITY b) Poultry: number broilers/layers in unit: _____	15		
4.2. LIVESTOCK REARING INTENSITY c) Rabbits: number animals in unit: _____	0.03		
4.2. LIVESTOCK REARING INTENSITY	2		
4.2. LIVESTOCK REARING INTENSITY	WEIGHTING	RANK	SCORE

d) Goats: number animals in unit: _____	3		
4.2. LIVESTOCK REARING INTENSITY	WEIGHTING	RANK	SCORE
e) Sheep: number animals in unit: _____	3		
4.2. LIVESTOCK REARING INTENSITY	WEIGHTING	RANK	SCORE
f) Horses: number animals in stable: _____	5		
4.2. LIVESTOCK REARING INTENSITY	N/A REFERENCE ONLY		
g) Other please specify			
4.3 CHEMICAL USAGE AND DISPOSAL	WEIGHTING	RANK	SCORE
a) Fertilizers/pesticides/animal hormones/antibiotics stored and/or used on site <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (9)	4		
4.3 CHEMICAL USAGE AND DISPOSAL	WEIGHTING	RANK	SCORE
b) Leakage of aforementioned chemicals observed <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (10)	7		
4.3 CHEMICAL USAGE AND DISPOSAL	WEIGHTING	RANK	SCORE
c) Evidence of dedicated storage vessel/pit for used chemical containers <input type="checkbox"/> No (0) <input type="checkbox"/> Yes (8)	8		
4.4 ANIMAL WASTE MANAGEMENT	WEIGHTING	RANK	SCORE
<input type="checkbox"/> Waste treated on-site and removed for off-site disposal (2)	15		
<input type="checkbox"/> Waste used as fertilizer on site (2)			
<input type="checkbox"/> Waste composting – unsheltered (note this is better practice) (3)			
<input type="checkbox"/> Waste composting – sheltered (4)			
<input type="checkbox"/> Waste treated on-site and then discharged into environment (4)			
<input type="checkbox"/> Waste washed directly into watercourse or drain (15)			
SECTION 3 SUBTOTAL SCORE (SUM OF SCORES FROM 3.1-3.3):			
TOTAL SCORE SECTIONS 1, 2, 3, 4 =			

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