**Tiered Risk Assessment Management (TRAM) Proposal**

For a Rainwater Harvesting System at:

Project/Site Name

Lot: 0000 Square: 0000 Parcel: 0000

Project/Site Address

Prepared By:

Company/Organization Name

Author’s Name

Company/Organization Address

City , State Zip Code

Telephone Number

Email

Assessment Preparation Date:

**Date**

**STEP 1: SITE INVESTIGATION**

* 1. Site Location Map



* 1. Zoning Classification
     1. Zoning Classification Table

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| --- | --- | --- |
| **PROPERTY** | **ADDRESS** | **ZONING CLASSIFICATION** |
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* + 1. Potential Contaminants in Industrial Zones Table

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| **INDUSTRIAL PROPERTY** | **POTENTIAL CONTAMINANT** | | **LOCATION** |
| **CHEMICAL** | **MICROBIAL** |
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* 1. Historic Site Conditions

Insert a short narrative of how the property was historically used.

* 1. Existing Site Conditions
     1. Description

Insert an overall description of the site property and surrounding areas.

* + 1. Planned Future Uses

Insert planned future uses of the site.

* + 1. Environmental Investigations

Insert a description of any portion of the site regulated by the Resource Conservation and Recovery Act (RCRA), Superfund Program, or any other environmental investigation.

* + 1. Environmental Enforcement Actions

Insert current status of ongoing or unresolved Consent Orders, Compliance Agreements, Notices of Violations (NOV), or other activities.

* + 1. Existing Conditions Schematic



1.4.6 Roof Catchment Area Characteristics

Vehicular traffic is allowed (i.e. parking structures)

Overflow or bleed-off pipes from roof-mounted appliance that contribute to the collection area (i.e. air conditioning units, hot water services, solar heaters)

Flues or smoke stacks from heaters, boilers, or furnaces contaminate roof surfaces

Roof is covered with lead flashing or exposed areas are painted with lead-based paints

Roof is covered with a vegetated roof system

My site does not contain any of these elements

Insert additional information for all items checked above.

* 1. Stormwater Collection, Storage, Use and Exposure Routes
     1. Stormwater Collection and Storage Table

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| --- | --- | --- |
| **STORMWATER CATCHMENT AREA** | **STORMWATER COLLECTION SYSTEM** | **STORMWATER STORAGE SYSTEM** |
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Stormwater End Use 1: Stormwater End Use

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| --- | --- | --- | --- | --- | --- | --- |
| **POTENTIAL EXPOSURES** | | | | | | |
| **EXPOSED INDIVIDUALS** | **AGE GROUP** | **SENSITIVE POPULATION** | **ESTIMATED EXPOSURE TIME** | **ACTIVITIES** | **TYPE AND ROUTE OF EXPOSURE** | **EXPOSURE FROM UNINTENDED STORMWATER USE** |
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Stormwater End Use 2: Stormwater End Use

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| **POTENTIAL EXPOSURES** | | | | | | |
| **EXPOSED INDIVIDUALS** | **AGE GROUP** | **SENSITIVE POPULATION** | **ESTIMATED EXPOSURE TIME** | **ACTIVITIES** | **TYPE AND ROUTE OF EXPOSURE** | **EXPOSURE FROM UNINTENDED STORMWATER USE** |
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**STEP 2: LIKELIHOOD OF EXPOSURE**

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| --- | --- | --- | --- | --- |
| **STORMWATER END USE** | **EXPOSED INDIVIDUALS** | **ACTIVITIES** | **LIKELIHOOD OF EXPOSURE** | **COMMENTS** |
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**DECISION POINT 1: ARE EXPOSURES LIKELY?**

The information provided above supports a determination that exposures are “unlikely,” and no further study or analysis is required.

The information provided above supports a determination that exposure is “possible” or “likely” and requires the evaluation of maximum risk based on the concentration of contaminants. Continue to Step 3.

Provide additional information on activities where human exposures are “possible” or “likely.”

**STEP 3: CONCENTRATION OF CONTAMINANTS IN STORMWATER**

* 1. Sampling Plan
     1. Contaminant List

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| **INORGANIC METALS** | **ORGANIC COMPOUNDS** | **PESTICIDES** | **PATHOGENIC MICROBES** |
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* + 1. Sampling Location Map



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| --- | --- |
| **SAMPLING LOCATION** | **# OF SAMPLES TAKEN** |
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|  |  |
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* + 1. Sampling Plan

Insert Sampling Plan.

* + 1. New Building Roof Materials

List all proposed roofing materials.

* + 1. Contaminant List

|  |  |  |  |
| --- | --- | --- | --- |
| **INORGANIC METALS** | **ORGANIC COMPOUNDS** | **PESTICIDES** | **PATHOGENIC MICROBES** |
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3.2.3 Estimated Contaminant Concentrations for New Roof

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| --- | --- |
| **CHEMICAL** | **ESTIMATED CONCENTRATION (µg/L)** |
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| --- | --- |
| **E. COLI** | **ESTIMATED CONCENTRATION (CFU/mL)** |
|  |  |

**STEP 4: STORMWATER CONCENTRATIONS COMPARISONS WITH RISK BASED LEVELS**

* 1. Exposure Conditions and Intensity

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| --- | --- | --- | --- | --- |
| **STORMWATER END USE** | **ROUTE OF EXPOSURE** | **EXPOSURE ASSUMPTIONS** | | **EXPOSURE INTENSITY (SEVERE, HIGH, MED, LOW)** |
| **VOLUME INGESTED (mL)** | **DAYS (PER YEAR)** |
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| **UNINTENDED\**  **UNAUTHORIZED STORMWATER USE** | **ROUTE OF EXPOSURE** | **EXPOSURE ASSUMPTIONS** | | **EXPOSURE INTENSITY (SEVERE, HIGH, MED, LOW)** |
| **VOLUME INGESTED (mL)** | **DAYS (PER YEAR)** |
|  |  |  |  |  |
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* 1. Risk-Based Screening

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| **CHEMICAL** | **RSL CONCENTRATION (µg/L)** | **SAMPLE/ESTIMATED CONCENTRATION (µg/L)** | **DOES SAMPLE CONCENTRATION EXCEED RSL?** |
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| --- | --- | --- | --- |
| **E. COLI** | **RSL CONCENTRATION (CFU/mL)** | **SAMPLE/ESTIMATED CONCENTRATION (CFU/mL)** | **DOES SAMPLE CONCENTRATION EXCEED RSL?** |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **C. PARVUM** | **RSL CONCENTRATION (CFU/mL)** | **SAMPLE CONCENTRATION (CFU/mL)** | **DOES SAMPLE CONCENTRATION EXCEED RSL?** |
|  |  |  |  |

**DECISION POINT 2: IS MAXIMUM RISK FOR UNTREATED STORMWATER ACCEPTABLE?**

No contaminants failed the risk-based screening and stormwater does not appear to pose a threat to human health. No further action is necessary.

One or more contaminants failed the risk-based screening. Actions must be taken to lower the risks to an acceptable level. Continue to Step 5.

Identify the contaminants that failed risk-based screening. Specify any contaminants that exceed the RSLs by less than one or two orders of magnitude.

**STEP 5: TREATMENT TECHNOLOGY SELECTION**

Provide a full description of the treatment system, specifications, system operating efficiency, construction sequencing, maintenance tasks, and inspection requirements. Explain how the treatment technology will address the contaminants that failed the risk-based screening in Step 4.

**STEP 6: STORMWATER COMMISSIONING PROGRAM**

Define a stormwater commissioning program.

**STEP 7: COMPARISON OF TREATED STORMWATER CONCENTRATIONS TO RISK BASED LEVELS**

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| --- | --- | --- | --- |
| **CHEMICAL** | **RSL CONCENTRATION (µg/L)** | **TREATED SAMPLE CONCENTRATION (µg/L)** | **DOES SAMPLE CONCENTRATION EXCEED RSL?** |
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**DECISION POINT 3: IS THE RESIDUAL RISK FOR TREATED STORMWATER ACCEPTABLE?**

The stormwater treatment system efficiently reduced contaminant levels to acceptable concentrations.

The stormwater treatment system failed to meet design specifications and does not achieve the required risk-based acceptable concentrations. Repeat Steps 5 through 7.

If the treatment system reduced contaminant levels to acceptable concentrations, provide verification sample results and conclusions indicating the treatment system is performing as designed.

If the treatment system failed to reduce contaminant levels to acceptable concentrations, provide an explanation for the failure and identify modifications to the selected treatment system or an alternate technology that will achieve the desired concentration.

**STEP 8: POST-CONSTRUCTION MONITORING PROGRAM**

Provide a post-construction monitoring program.