**SLAMM: Source Loading And Management Model**

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**Comments**

- SLAMM can analyze an urban drainage area with up to 6 different land use and 14 source area types per land use.
- SLAMM’s BMPs include: catch basins, swales, infiltration devices, porous pavement, wet detention ponds, street sweeping and user-defined devices.
- SLAMM can run batch mode that permits the simulation of additional subareas and/or different management scenarios.
- For additional wet detention pond analysis or design, SLAMM output can be entered into the DETPOND model.
- SLAMM is a continuous sequential event based model. SLAMM simulates rainfall runoff; snowmelt may be modeled with a modified rain file.
- SLAMM simulates runoff volume and loading for ten standard and six user-defined pollutants.
- SLAMM is ideally suited for pollutant source area identification and source area BMP evaluation. It is also useful for water balance studies in conjunction with DETPOND.

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**SLAMM MODEL FLOW CHART**

- **Six Land Use Types + Streets**
  - Source Areas (14)
  - Street Areas
  - Small Storms Urban Hydrology (12)
  - Pollutant Generation
    - Particulate (9) / Soluble (10)
    - Build up / Wash off
  - Pollutant Delivery
    - Drainage System Features
    - Street Texture (4)
  - Street, Source Area and Outfall Controls
  - Model Output

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**SLAMM Land Uses**

- Residential
- Institutional
- Commercial
- Industrial
- Open Space
- Freeways
SLAMM SOURCE AREA TYPES
For Residential, Institutional, Commercial, Industrial, and Open Space

- Roofs
- Paved Parking/storage
- Unpaved Parking/Storage
- Playgrounds
- Driveways
- Sidewalks/Walks
- Street Areas
- Other directly connected impervious areas
- Other partially connected impervious areas

SLAMM Source Area Types for Freeways

- Undeveloped Areas
- Other Pervious Areas
- Paved Lanes/Shoulder Areas
- Large Turf Areas
- Other directly connected impervious areas
- Other partially connected impervious areas

SLAMM MODEL FLOW CHART

Six Land Use Types + Streets

Source Areas (14)

Small Storms Urban Hydrology (12)

Pollutant Generation
Particulate (9) / Soluble (10)

Pollutant Delivery
Drainage System Features

Street, Source Area and Outfall Controls

Model Output

SLAMM Hydrology

Runoff Coefficient Area Types
1. Connected flat roofs
2. Connected pitched roofs
3. Directly connected impervious areas
4. Directly connected unpaved areas
5. Pervious area - sandy (A/B) soils
6. Pervious area - clayey (C/D) soils
7. Smooth textured streets
8. Intermediate textured streets
9. Rough textured streets

Drainage Efficiency Factors
1. w/o alleys, medium to high density land use
2. w/ alleys, medium to high density land use
3. strip commercial and shopping center land use

SLAMM Volumetric Runoff Coefficients (Rv)

Runoff = Rainfall x Rv

Rainfall (in) vs. Volumetric Runoff

0.00 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00

0.00 1.00 2.00 3.00 4.00 5.00

Runoff Coefficient Area Types

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Drainage Efficiency Factors

- w/o alleys, medium to high density land use
- w/ alleys, medium to high density land use
- strip commercial and shopping center land use
SLAMM Pollutant Generation

Particulate Forms
- Particulate Solids (kg/kg) (1)
- Phosphorus (mg/kg)
- Total Kjeldahl Nitrogen (mg/kg)
- Chemical Oxygen Demand (mg/kg)
- Chromium (micrograms/kg)
- Copper (micrograms/kg)
- Lead (micrograms/kg)
- Zinc (micrograms/kg)
- Fecal Coliform Bacteria (#/100 ml) (2)

Filterable (Soluble) Forms
- Filterable Solids (mg/L)
- Phosphorus (mg/L)
- Total Kjeldahl Nitrogen (mg/L)
- Chemical Oxygen Demand (mg/L)
- Chromium (micrograms/L)
- Copper (micrograms/L)
- Lead (micrograms/L)
- Zinc (micrograms/L)

+ Ammonia for Madison.

SLAMM Pollutant Generation for Street Areas

The user is asked to determine if initial street dirt and street dirt accumulation are determined by the model based on land cover type and street texture or user input values.

Pollutants are then washed off street surfaces by storm events.

SLAMM MODEL FLOW CHART

SLAMM Pollutant Delivery Drainage System Features

1. Grass swales
2. Undeveloped roadside
3. Curb and gutters, ‘valleys’, or sealed swales

The condition options for curbs and gutters are:
1. Poor condition (or very flat)
2. Fair condition
3. Good condition (or very steep)
SLAMM Model Output

Output source areas by land use & outfall for each rain - complete printout. Output consists of runoff, concentration, and loading values, by rain event, for all source areas in each land use, and outfall totals for each rain event.

Output source area totals and outfall summaries. Output consists of runoff, concentration, and loading values for all rain events, for all source areas in each land use, and outfall value totals for entire model run.

Output outfall data only for each rain. Output consists of outfall runoff, concentration, and loading values by rain event.

Default option - Output outfall summaries only. Output consists of outfall runoff, concentration, and loading value totals for entire model run.

Runoff & Flow Summary
One line data summary per event.

Outfall Hydrograph Data
Three time increment options – 6, 15, or 60 minute. Output a component of SLAMM integration with SWMM