

## Area Coverage:

- The majority of the Strata is comprised of forested land.
- Agriculture land and fallow pastures are areas of interest in this study.

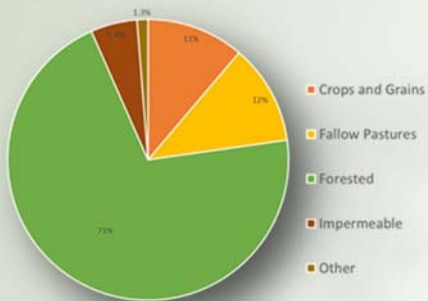


Figure 1: Land coverage in percentage

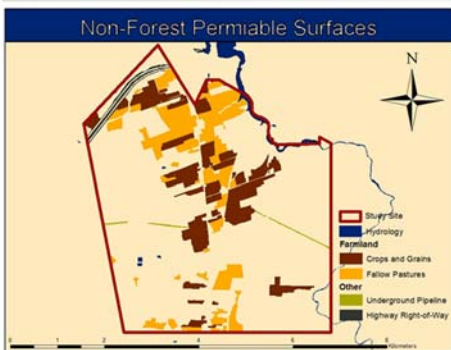


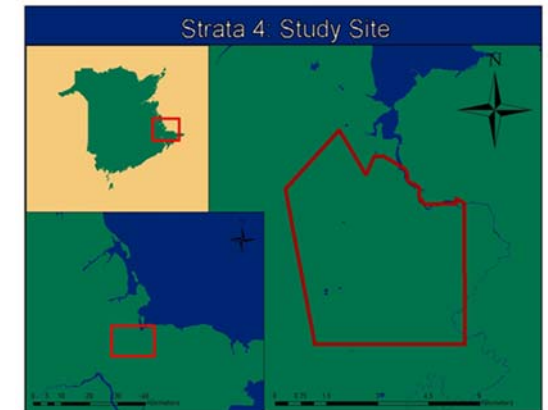
Figure 2: Area representation of permeable surfaces

Mount Allison  
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Advanced GIS  
GENS 4721

## A Spatial Assessment of Fecal Coliform Contamination in Shediac Bay, New Brunswick



Strata4: Westmorland  
County, NB



## Objectives

Characterize land use and investigate possible coliform sources to the Scoudouc River:

- What factors within the strata are potential contributors of coliform contamination?
- What are other point sources and generalized environmental drivers that may contribute to coliform levels?
- Could flow directionality analysis indicate how the point sources ultimately reach the Shediac Bay?

## Methods

### Step 1: Data Acquisition

### Step 2: Land Characterization

- Digitization
- Classification

### Step 3: Density Analysis

- Road and rooftop density raster
- Impermeable and permeable surfaces

### Step 4: Flow Direction

- Direction calculated from DEM
- Converted to point data and attribute angle from 0 to 360

### Step 5: Statistical Analysis

- Multivariate mixed-model linear regressions of precipitation and storm surge versus coliform levels.

## Analysis

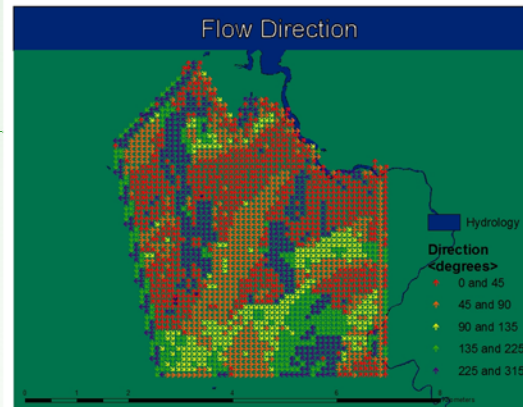


Figure 3: Directionality of flow based on digital elevation model (DEM).

	Relationship
Precipitation	YES
Storm surge	NO

Figure 4: Relationship of coliform levels with storm surge and precipitation data.

## Key Findings

- Flow directionality indicates that runoff from an area of high agriculture and pasture activities channels into the Scoudouc river. This is an area of concern due to the potential input of coliform into the river.
- Storm surge has a significant negative relationship with coliform levels, and precipitation has a significant positive relationship with coliform levels.
- If human land use were to increase beyond the current extent, potential coliform sources may be amplified.

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