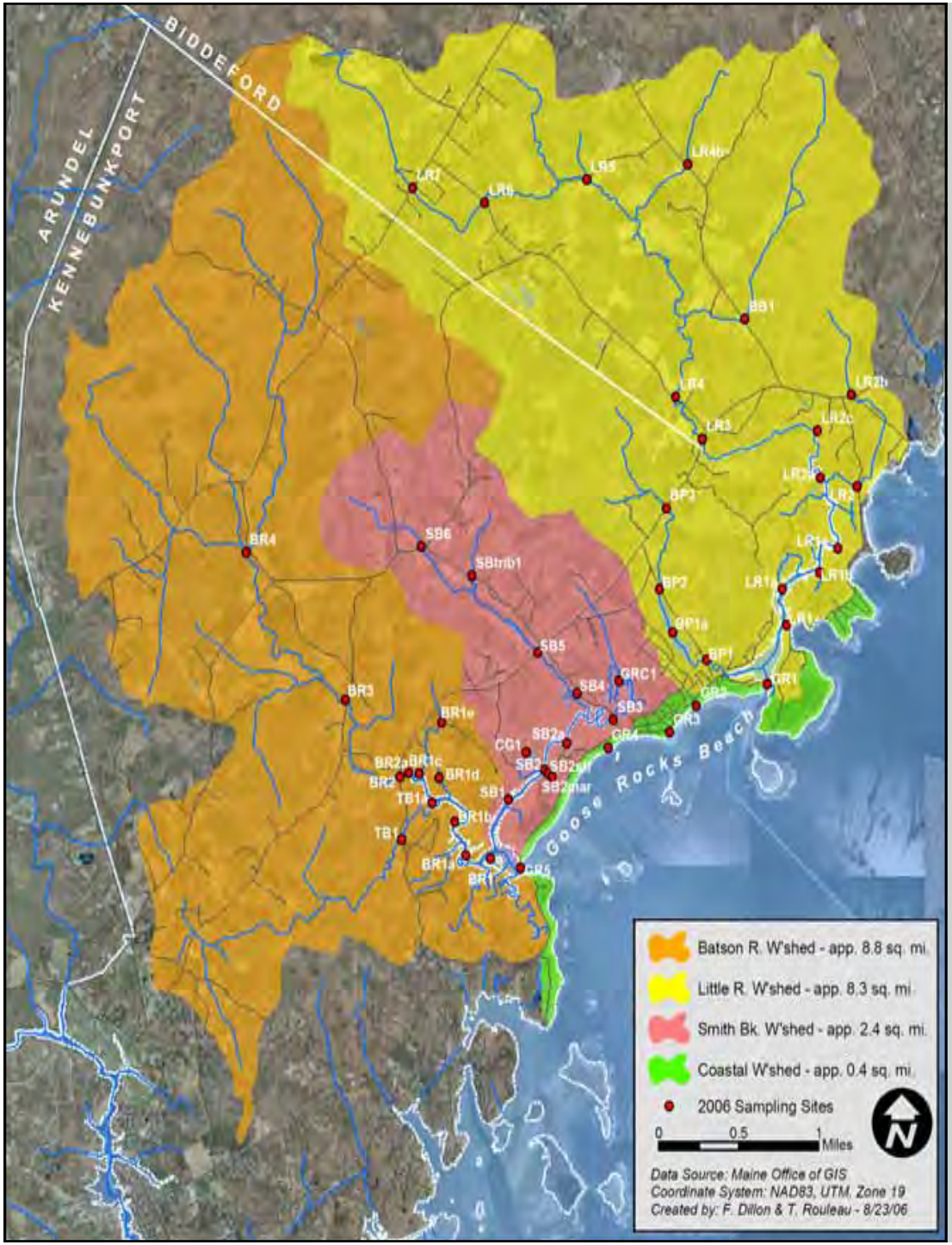


Goose Rocks Beach Water Quality Monitoring Project DRAFT REPORT and Presentation

October 5, 2006

prepared for:
Town of Kennebunkport

FB Environmental

Hillier & Associates

Jackson Estuarine Laboratory

Presentation Outline

1. **Project purpose/scope & sampling regime (F Bell)**
2. **Description of Study Area (J Hillier)**
3. **Hotspots Assessment, Bacteria Analysis and Conclusions (F Dillon)**
4. **Fluorescence Analysis & Conclusions (S Jones)**
5. **Recommendations (All)**
6. **Questions (please save until the end)**

Project Purpose

- **<u>Problem:</u> High bacteria counts = GRB beach postings and health risks**

- **<u>Project:</u> Employ a low cost analysis of bacteria sources affecting Goose Rocks Beach utilizing a suite of investigative tasks**

Scope of Services

1. <u>Conduct</u> GIS and Ground-Truthing Hotspots Analysis (July, August 2006)

2. <u>Conduct</u> Bacteria Testing & Analysis including Optical Brightener Tools (August 2006)

3. <u>Prepare, Report, and Present</u> Data Summaries, Reporting, and Recommendations (Sept, Oct 2006)

4. <u>Research</u> Availability of Future Funding (Nov 2006)

Follow up of 2005 Study

August, October, and November sampling by FB Environmental

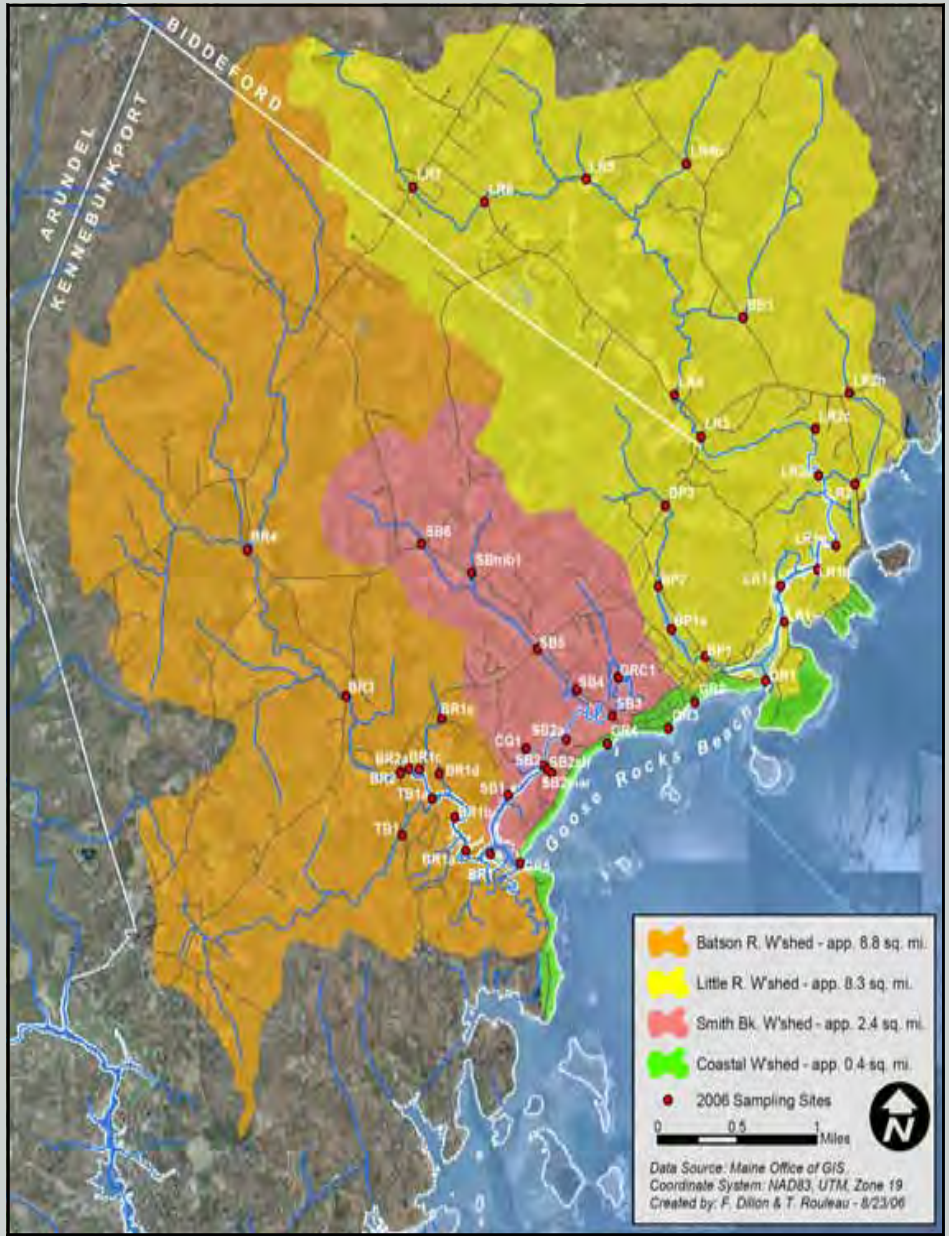
- **Spring Tide and Neap Tide Samples**
- **Limited Storm Sampling**

Sampling Regime

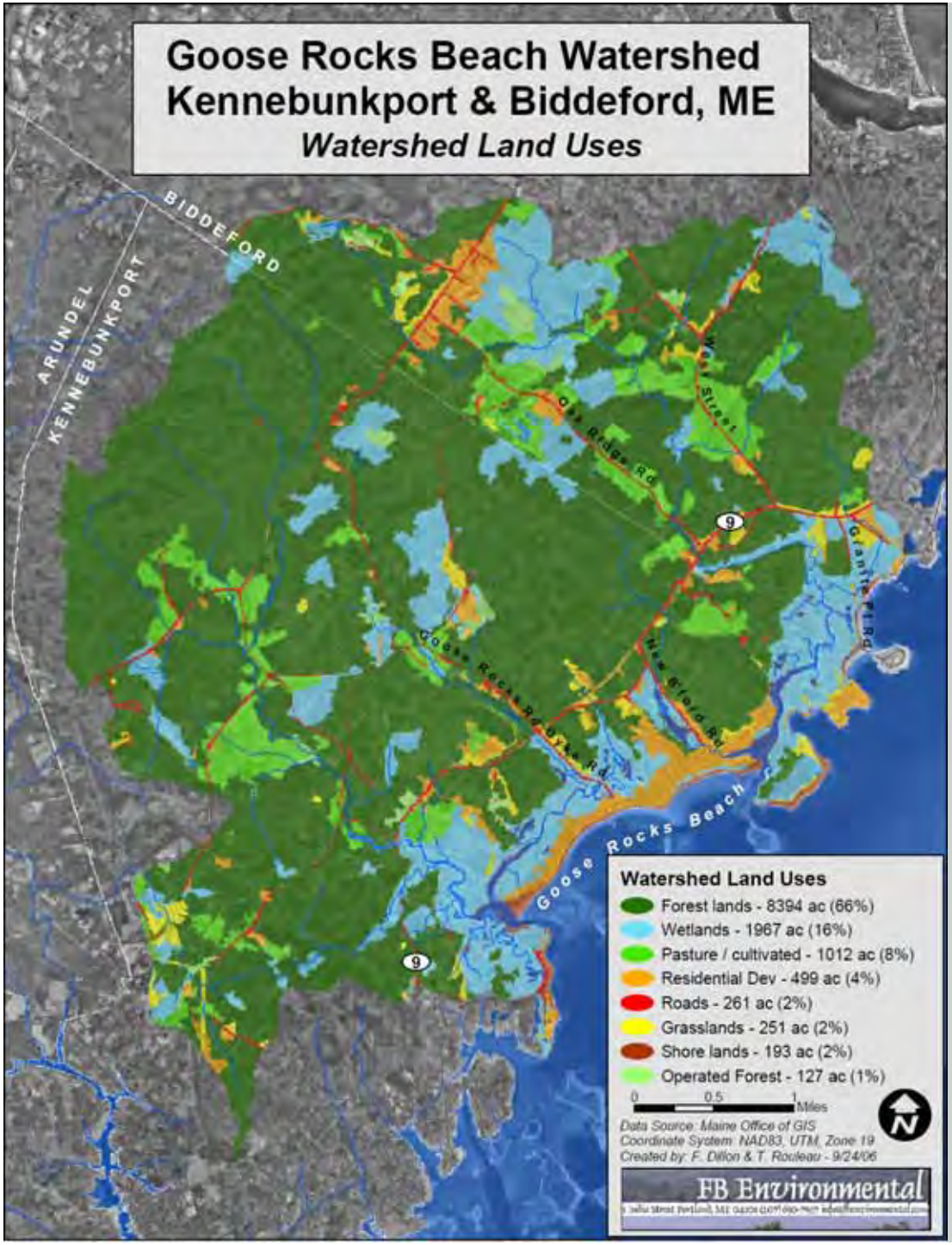
- **43 - 57 sites**
- **6 – 10 professional samplers**
- **4 dry weather sample events**
- **1 significant storm sample event (only one in August)**
- **More than 650 samples lab analyzed**
- **More than 1500 field measurements**

Sampling Regime

Description of Study Area – J Hillier



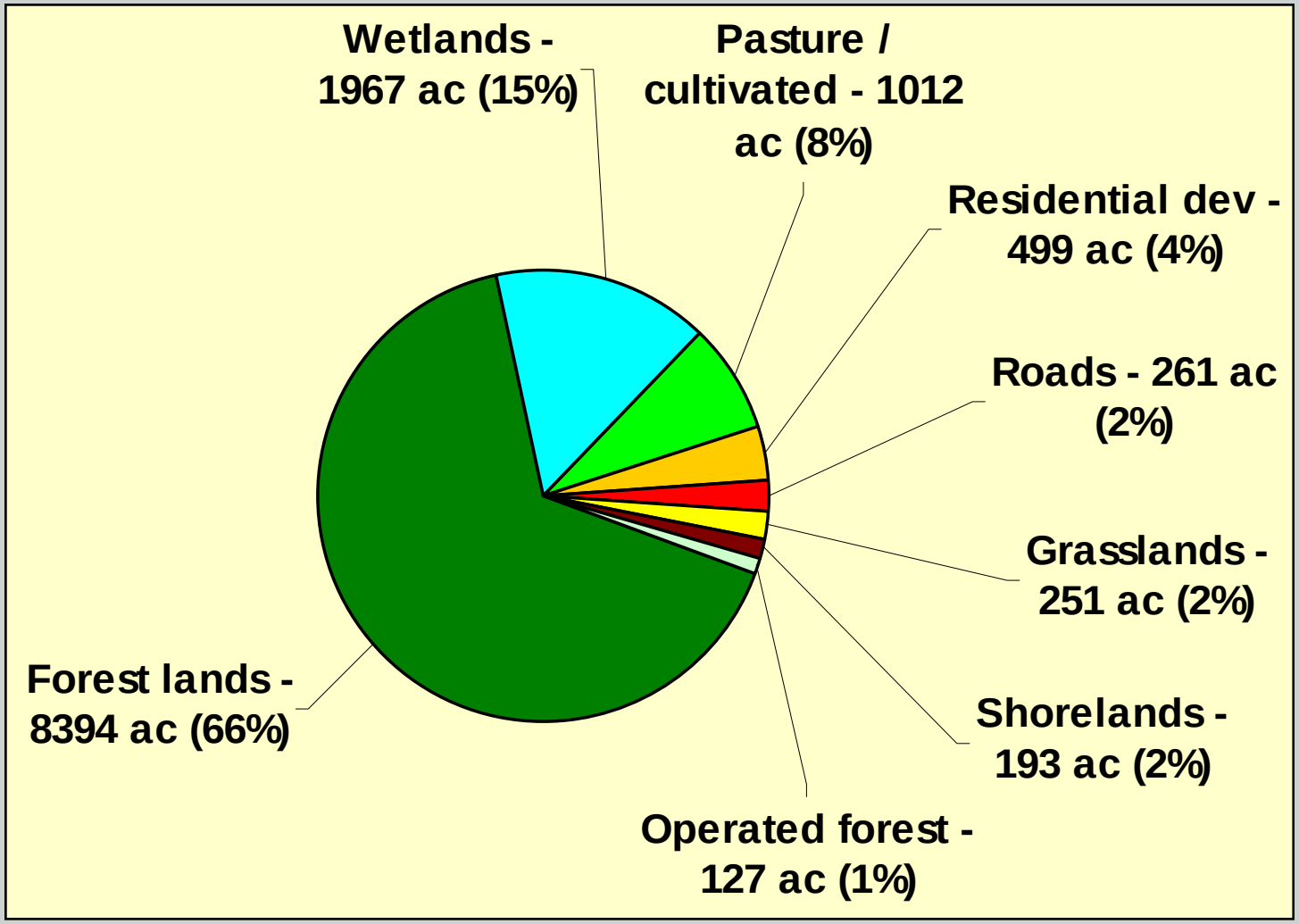
- **BATSON RIVER: 8.8 sq. mi.**
- **SMITH BROOK: 2.4 sq. mi.**
- **LITTLE RIVER: 8.3 sq. mi.**
- **BEACH FRONT: 0.4 sq. mi.**
- **<u>TOTAL W'SHED = 19.9 sq. mi</u>**


Goose Rocks Beach Watershed
Kennebunkport & Biddeford, ME
Watershed Land Uses
BIDDEFORD
ARUNDEL
KENNEBUNKPORT
Oak Ridge Rd
West Street
Granite Pt Rd
Goose Rocks Rd
Oyke Rd
New Bford Rd
Goose Rocks Beach
9
Watershed Land Uses
Forest lands - 8394 ac (66%)
Wetlands - 1967 ac (16%)
Pasture / cultivated - 1012 ac (8%)
Residential Dev - 499 ac (4%)
Roads - 261 ac (2%)
Grasslands - 251 ac (2%)
Shore lands - 193 ac (2%)
Operated Forest - 127 ac (1%)
0
0.5
1
Miles
Data Source: Maine Office of GIS
Coordinate System: NAD83, UTM, Zone 19
Created by: F. Dillon & T. Rouleau - 9/24/06
FB Environmental

Land Use

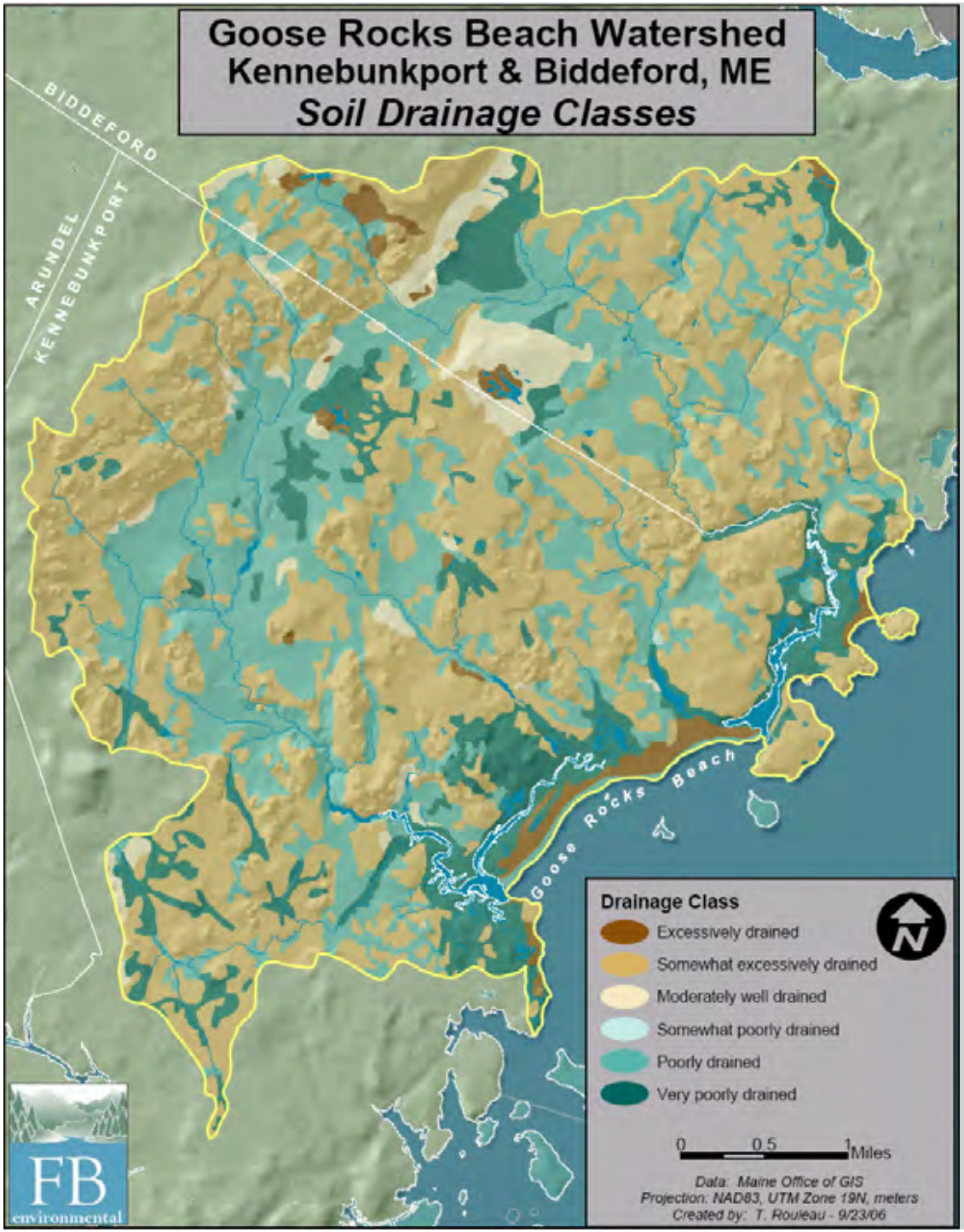
Land Use

~12,700 ac



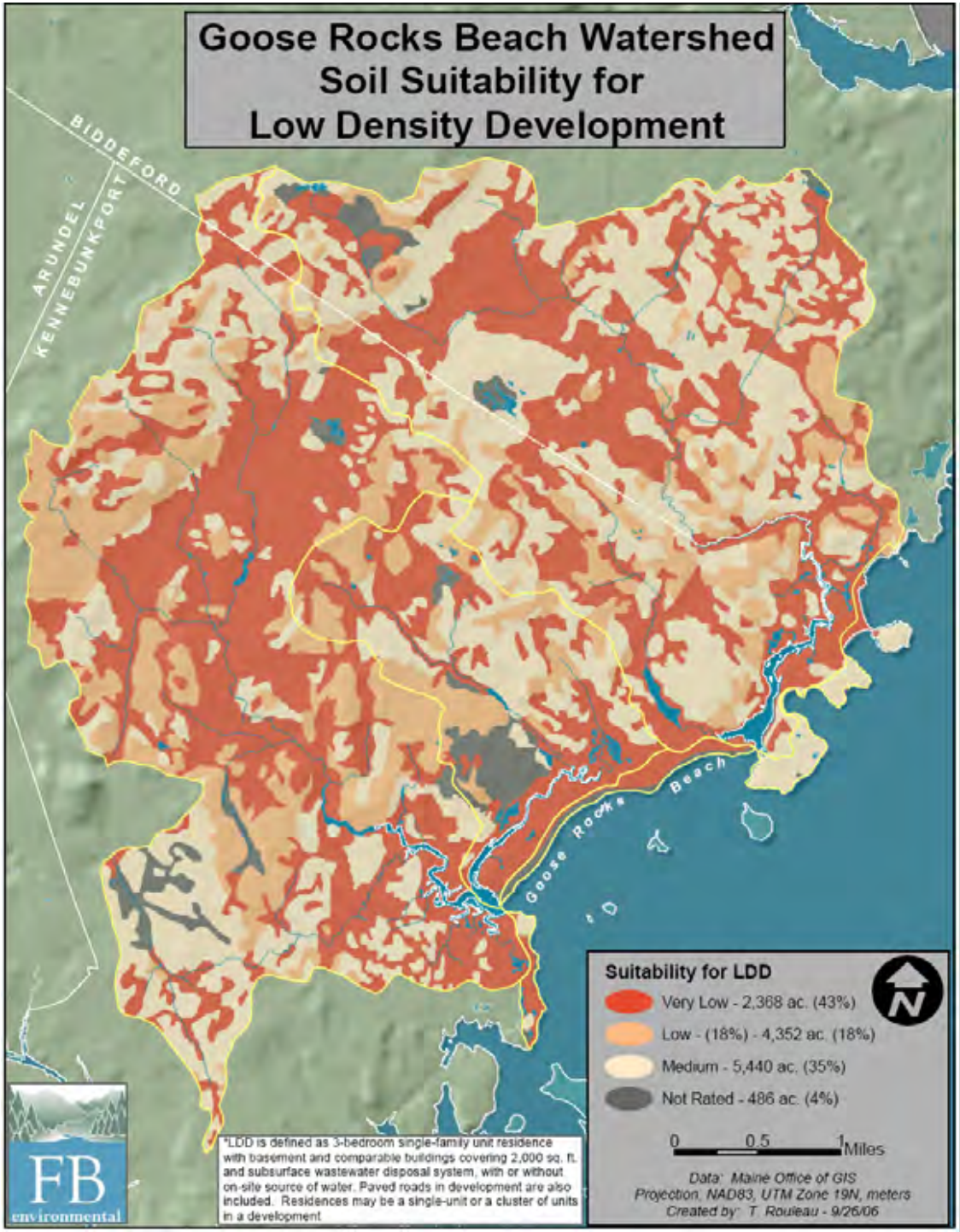
Elevation Model

- **BEDROCK GEOLOGY**
- **SURFICIAL GEOLOGY**
- **SOILS**



Soil Drainage Classes

- **Lyman-Tunbridge-Abram (61%)**
- **Scantic-Buxton-Lamoine (26%)**
- **Marsh Soils (13%)**



Soil Suitability for LDD

Limitations

- **Low permeability**
- **Silt / Clay (poorly drained)**
- **High permeability**
- **Sands and Gravels (excessively drained)**

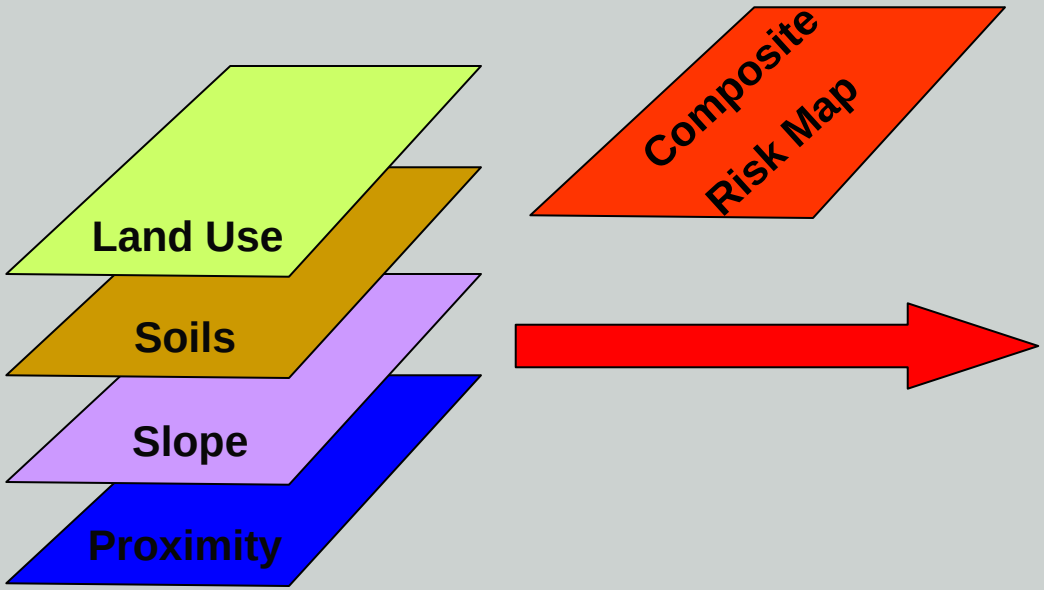
Currents - MGS

Hotspots Assessment, Bacteria Analysis and Conclusions (F Dillon)

GIS Layers for Hotspots Assessment

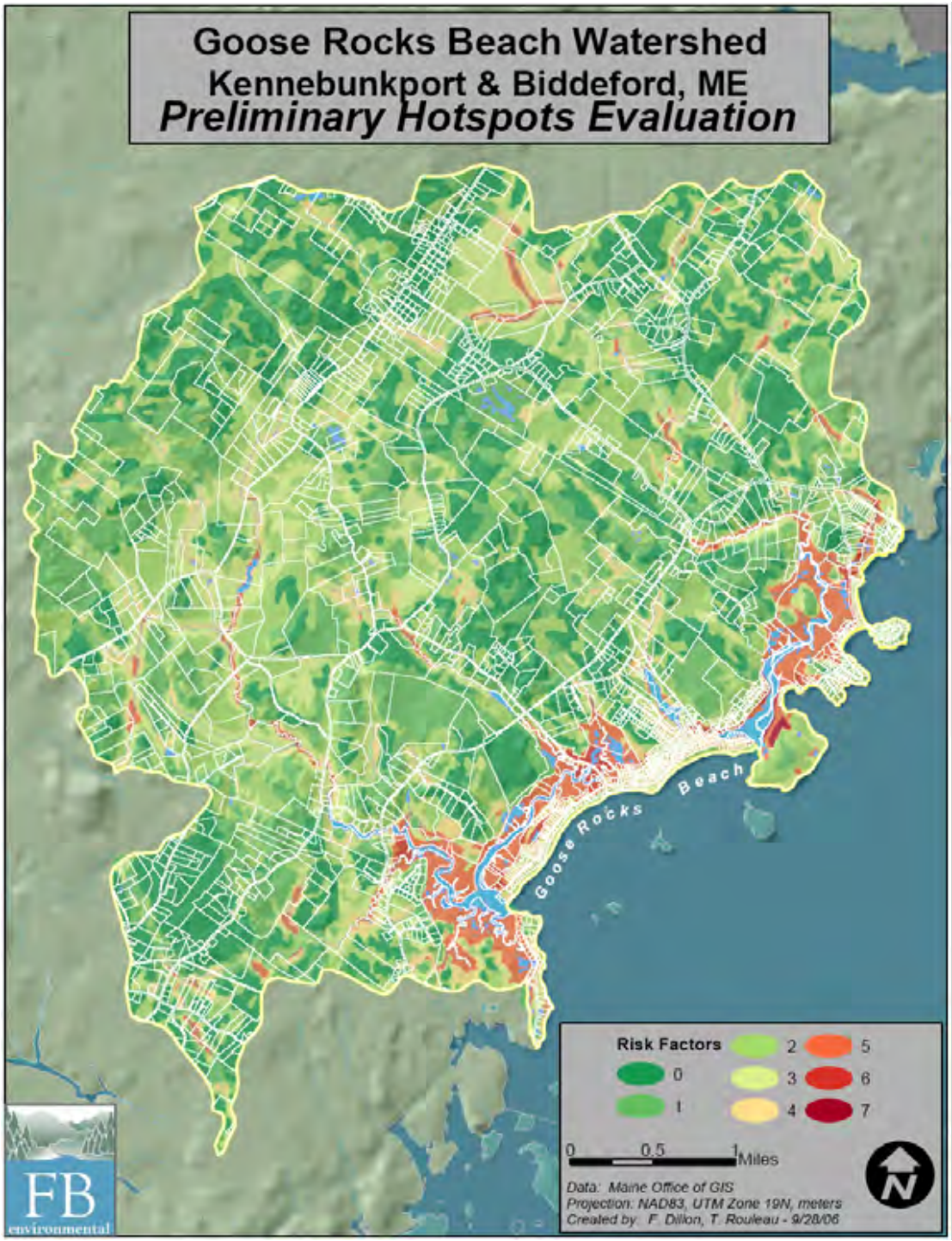
- **OBD:** DEP-licensed overboard discharges
- **Problem Sites:** DEP septic survey
- **Hydrobuff:** proximity to streams / estuaries
- **Riparian Residential:** developed parcels near surface waters
- **SFHASoils:** 100 year flood plain
- **Significant Wetlands:** directly connected to surface waters
- **Slope:** > 20%
- **Non-Sewered:** parcels not connected to public sewer

Overlay Technique for Risk Map



GIS Hotspots

- Summed all risk factors
- Risk level range 0-7
- Greatest risks near surface waters, wetlands and floodplains



GIS Hotspots with Parcels

- Can be used as planning tool
- Town may want to ID built parcels

WHAT ARE WE LOOKING FOR?

ENTEROCOCCI

- Indicator bacteria used to determine water quality for fecal pollution.
- Doesn’t cause illness directly but identifies presence of fecal pollution and possible existence of harmful pathogens.

EPA RECOMMENDED CRITERIA

- ***Marine water:*** 104 colonies per 100 mL for single sample or geometric mean of 35 colonies per 100 mL based on 5 or more samples collected within a 30-day period.
- ***Freshwater:*** 61 colonies per 100 mL for single sample or geometric mean of 31 colonies per 100 mL based on 5 or more samples collected within a 30-day period