



*Managing and protecting
Jamaica's land, wood and water*

The National Environment and Planning Agency

10 & 11 Caledonia Avenue, Kingston 5.

THE USE OF GIS IN NEPA

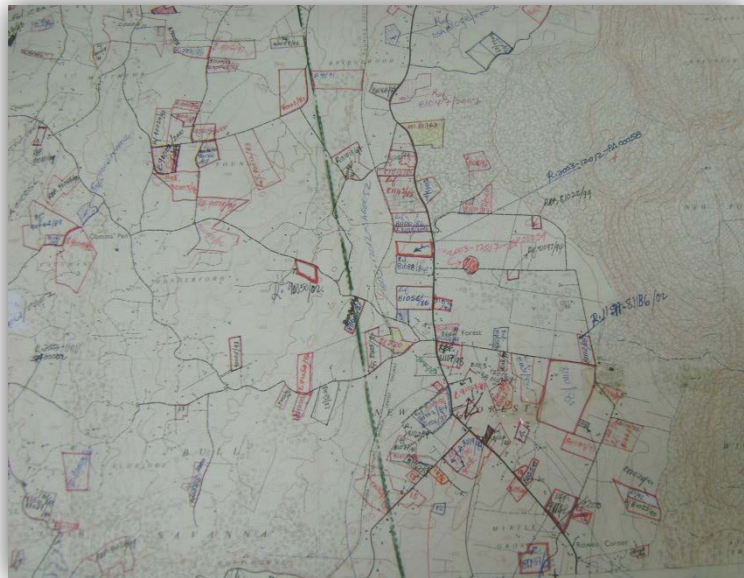
"Before Scenario"



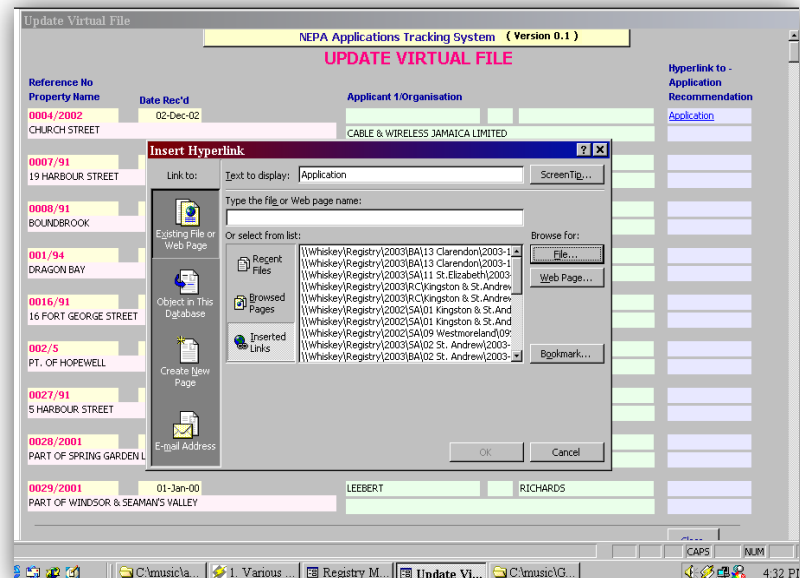
Using the Digitizing Board



Measuring using Coordinate spiral slide rule

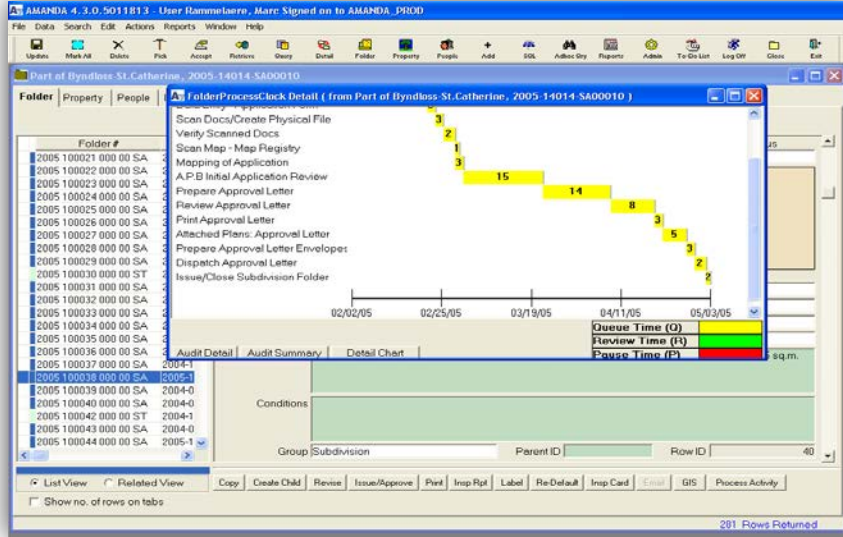


Manual Mapping of Location Maps

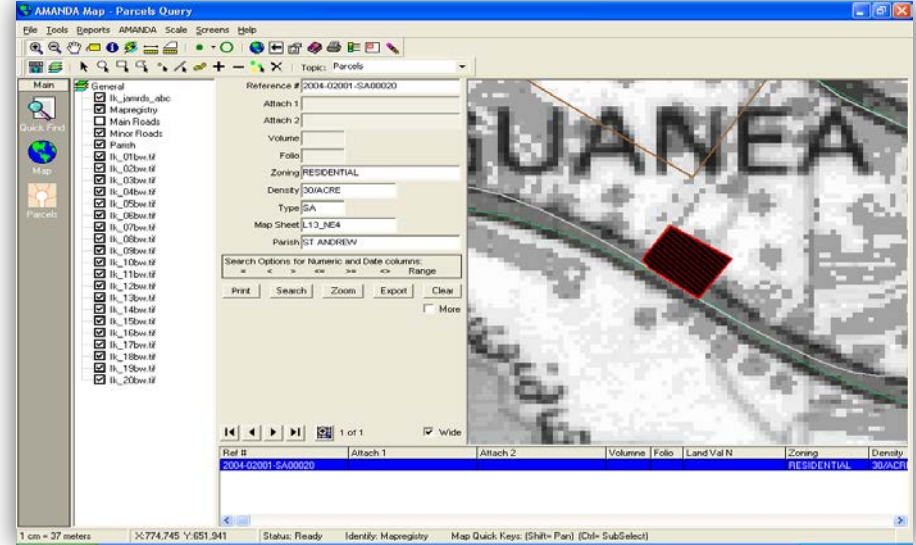


Access based tracking system

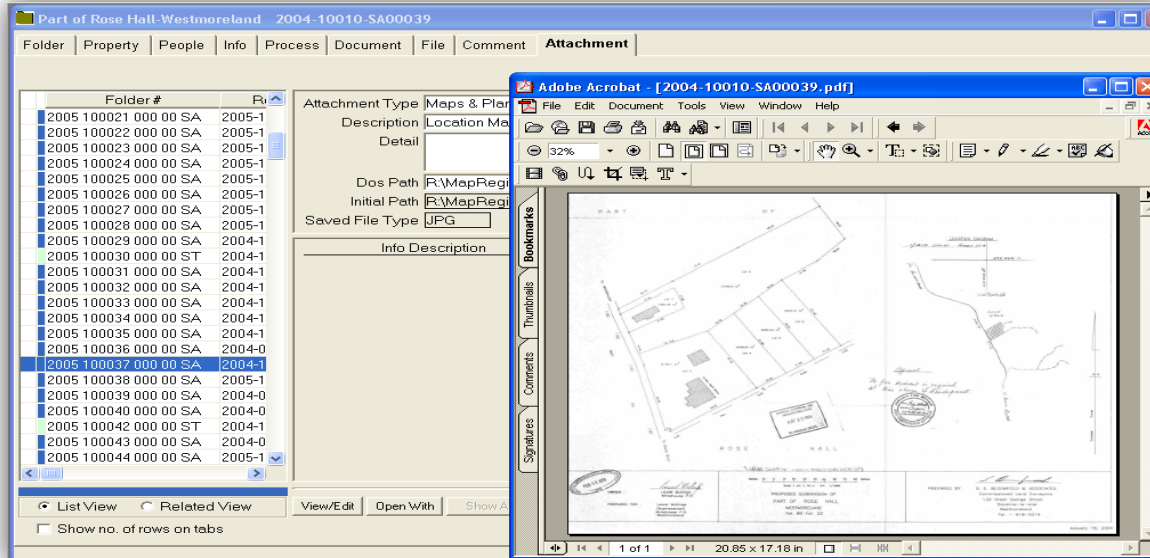
Web Enabled Tracking of Applications - AMANDA



Workflow Management System
(Assign tasks, Records time & activity)

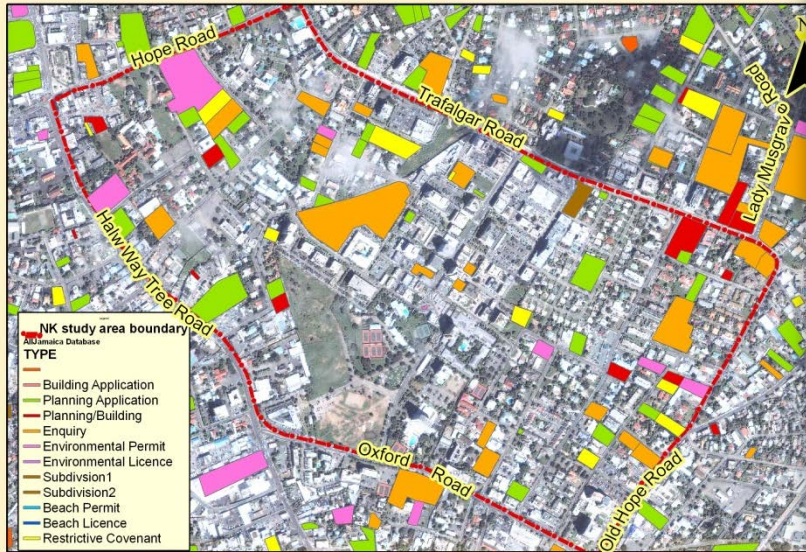


Data Management



Document Management

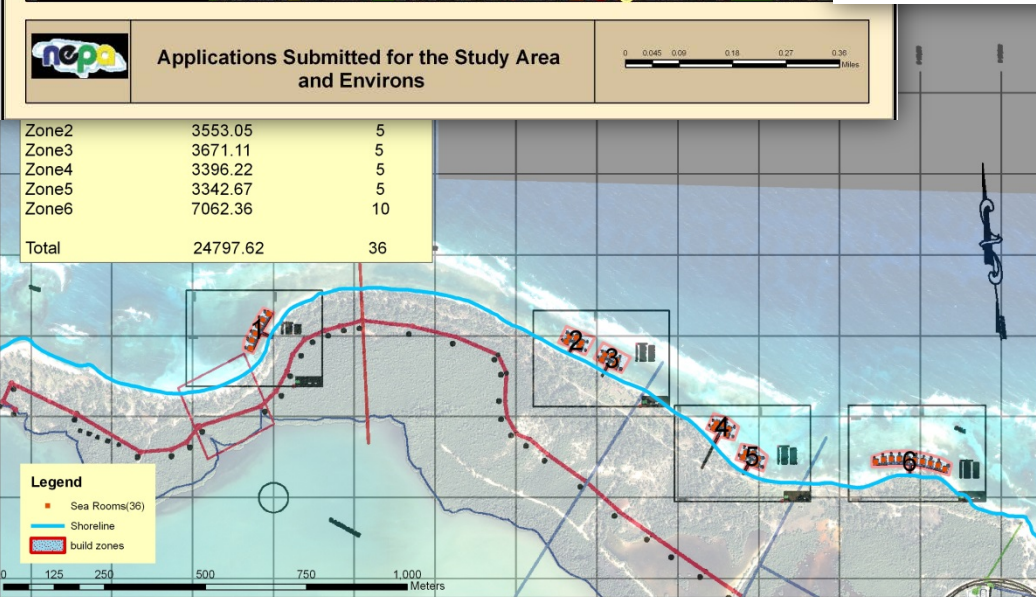
GIS Mapping of Development Proposals



Applications Submitted for the Study Area and Environs

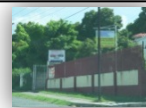
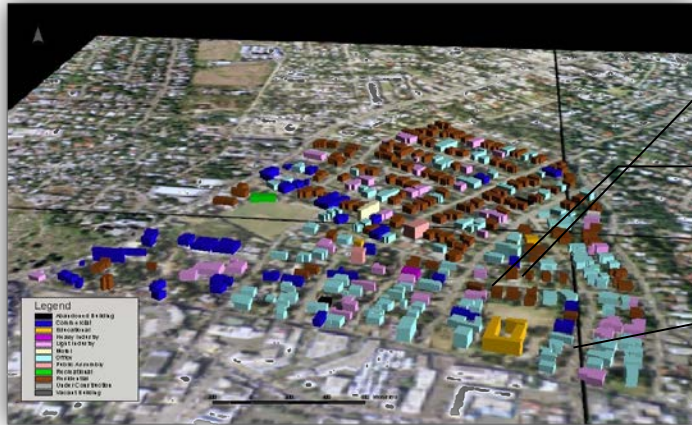
0 0.045 0.09 0.18 0.27 0.36 Miles

Zone2	3553.05	5
Zone3	3671.11	5
Zone4	3396.22	5
Zone5	3342.67	5
Zone6	7062.36	10
Total	24797.62	36



Forecasting / Modeling Future Neighborhood Growth / Zoning

Before



Conspicuous signage lined the streets. This detracted from the residential character of the community.

The location of garages in the area presented noise, health and environmental nuisances. In the re-development process, these were the first to be removed.



Inadequate on-site parking meant that streets were always congested and contributed to the destruction of infrastructure.

After



With the removal of several non-conforming uses within the community, the area has once again become a prime residential location. Construction of well planned developments is booming.



Professional offices are located only in those areas zoned for such within the community. They retain a residential façade, while keeping advertising signage to a minimum.

On-site parking is provided for by all professional offices. This has greatly improved the aesthetics of the area, and has reduced congestion.



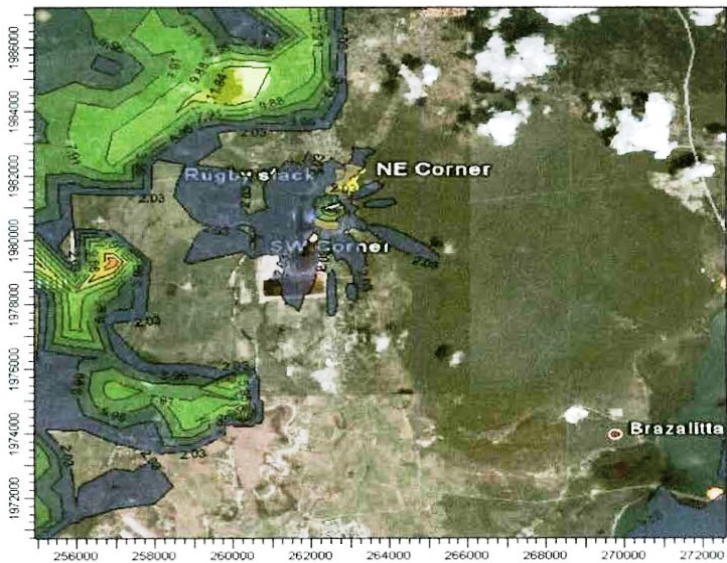
EASTWOOD PARK GARDENS 2018

Using GIS to Forecast Community Redevelopment

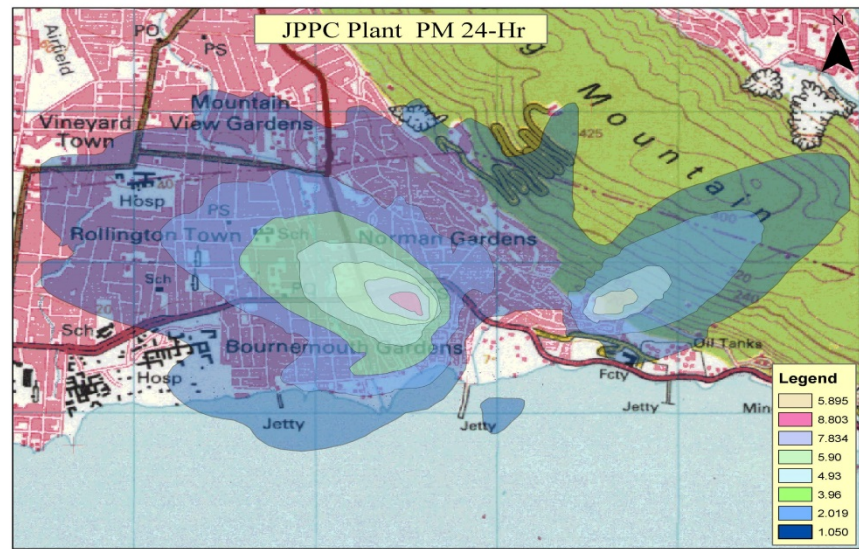
LOCAL AREA PLANNING BRANCH
NOVEMBER 2003



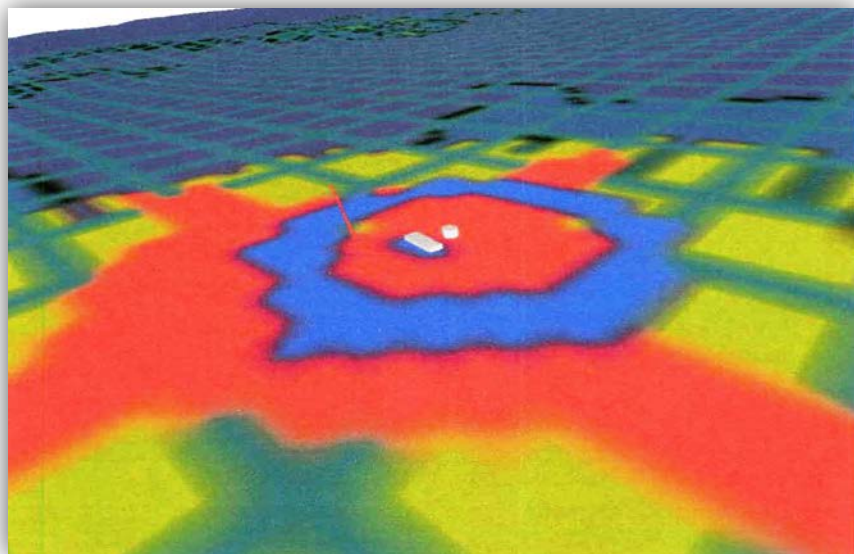
Modeling Air Quality Discharges (EerMod)



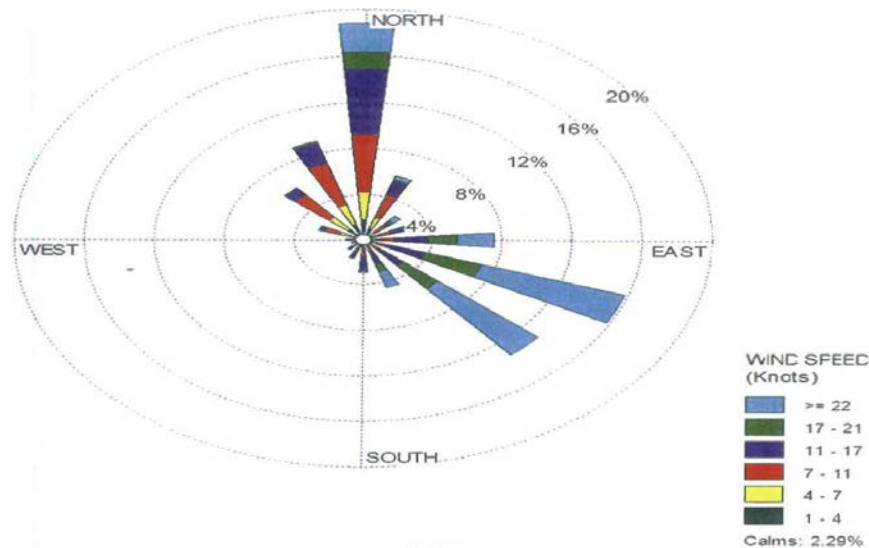
Dispersion Model FOR Rugby Plant- NO₃ (24hr)



Dispersion Model JPPC Plant 24-Hr

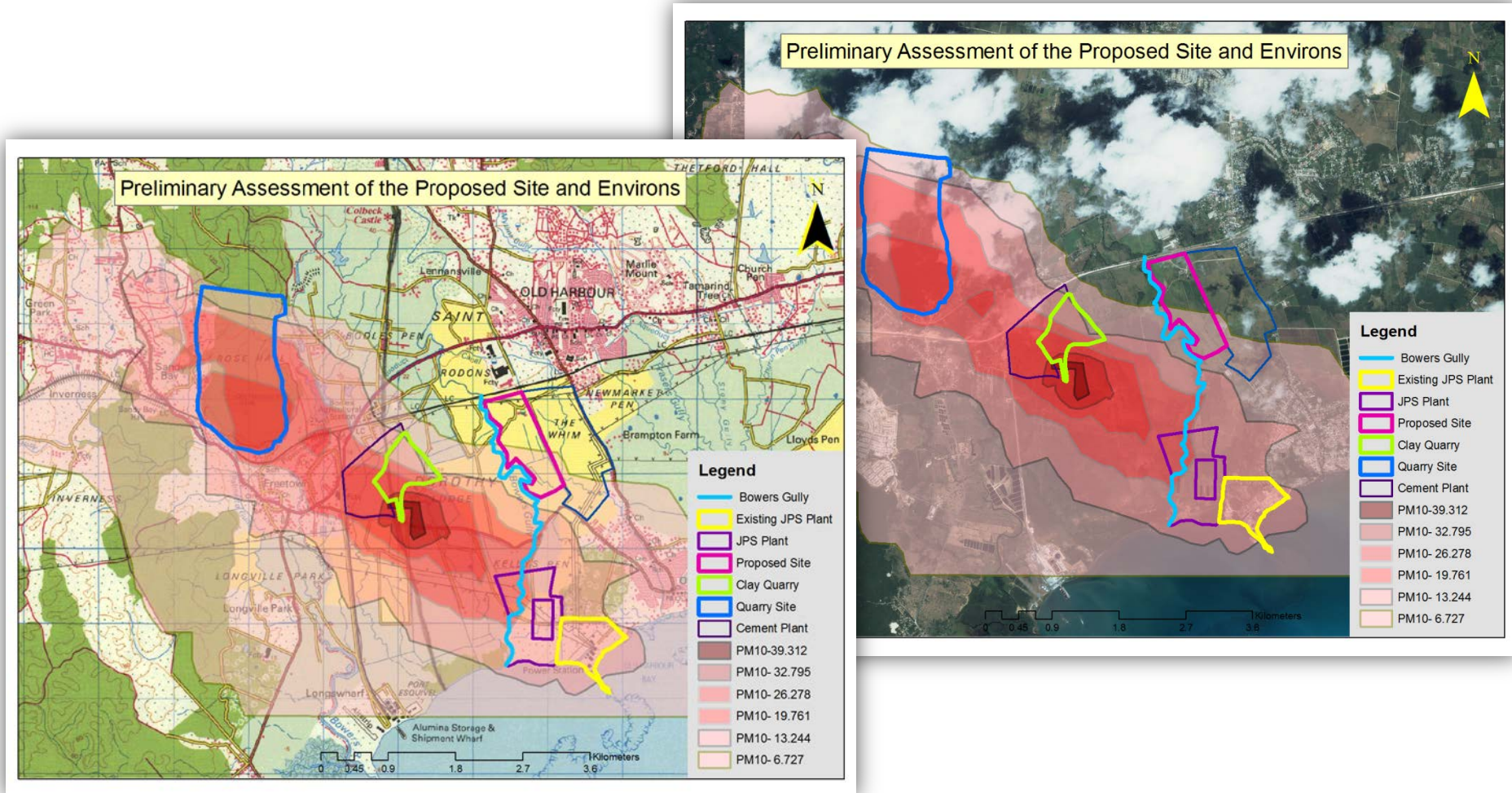


3D Dispersion Model for Plant

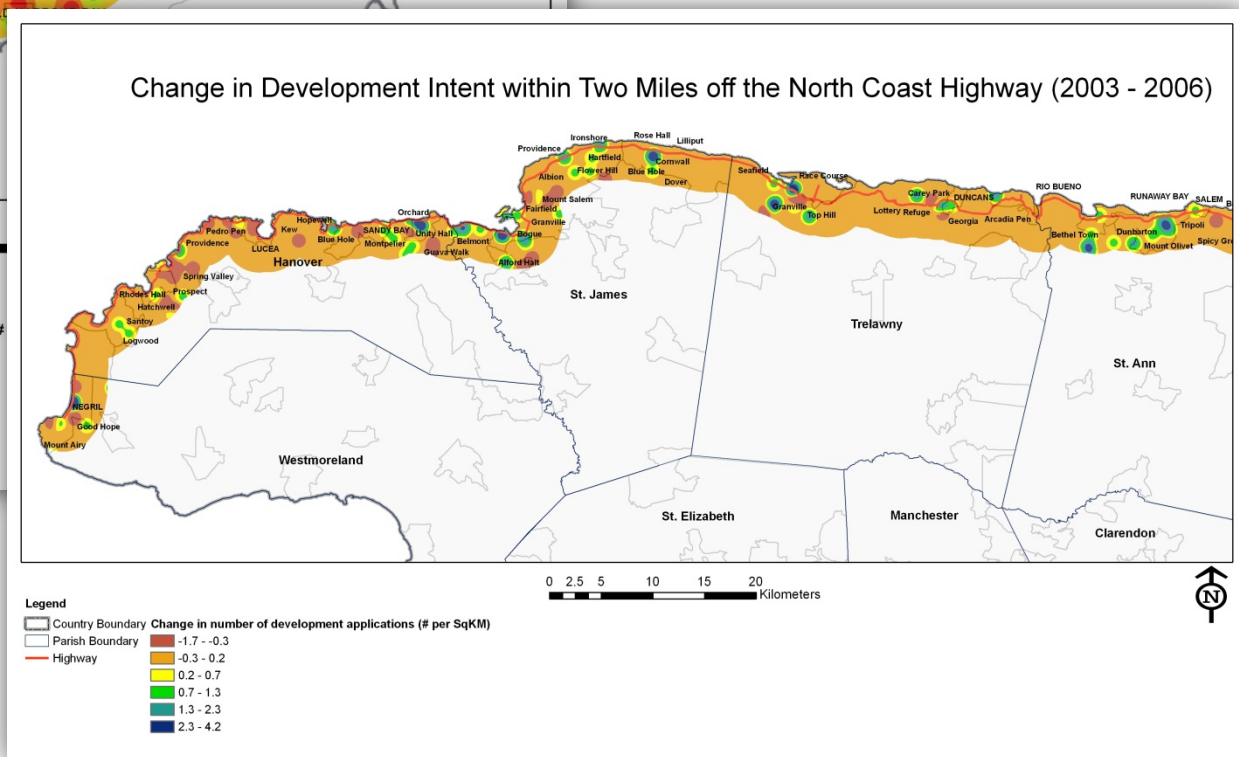
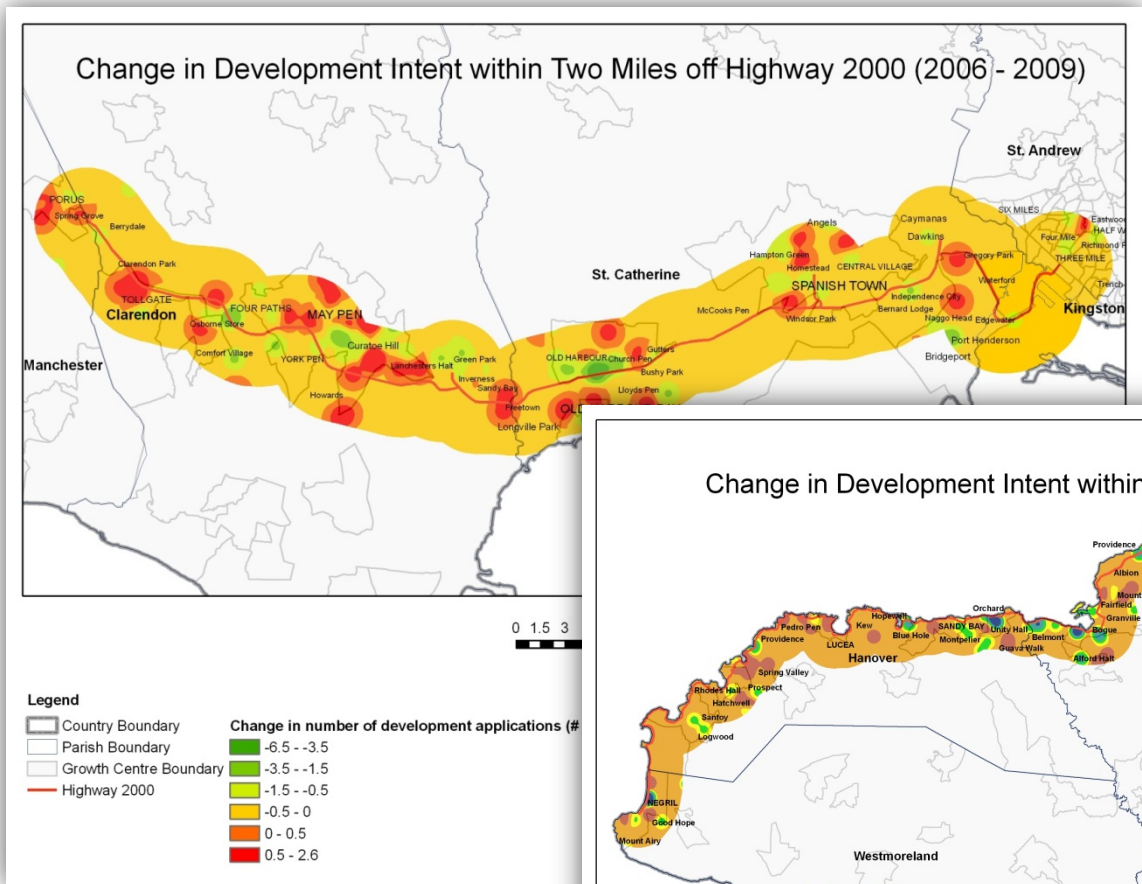


Wind Rose Plot (Rugby Lime Plant)

Air Quality Modeling and the Assessment of Development Proposals



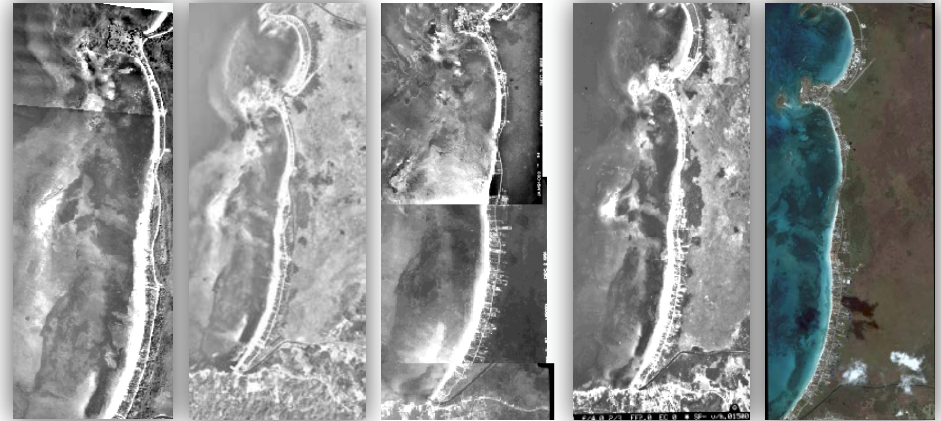
Analyzing the Impact of Highways and Development Proposals



Shoreline Change/Encroachment Analysis-Negril



Significant Erosion along Long Bay, Negril 2005



1968

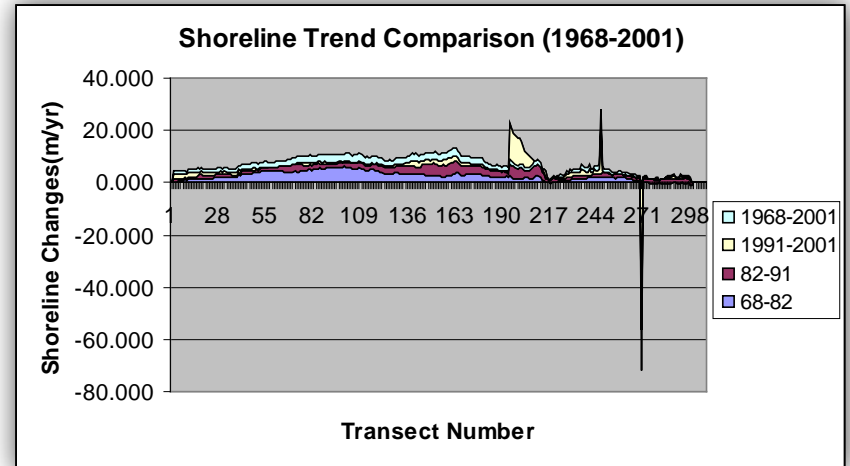
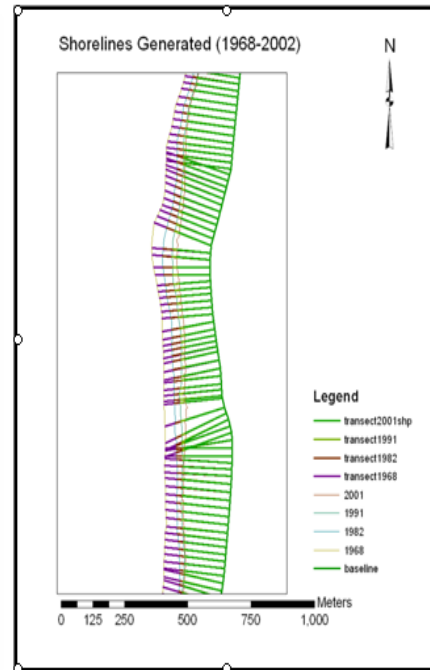
1979

1991

1999

Mosaic

Mosaic



Graph showing Shoreline changes for the period (1968-2001)

Generating shoreline and transects for analysis

Land Cover Classification using Remote Sensing Techniques



Supervised and
Unsupervised
Classifications

Development Planning

Land Use Zoning

The overarching objective for the planning system is that it should facilitate and promote sustainable and inclusive patterns of urban and rural development to help contribute to sustainable development.

□ Preparation of Development Orders/Plans

– **Development Order**

– Guide development of land in the order area by providing specific zones for certain classes of development including:

- Industrial
- Commercial
- Residential
- Resort
- Institutional
- Recreational
- Historical Sites



Policies & Technical Requirements Outlined in the Development Orders

- Zoning; Land Use – Existing/Proposed
- Location in relation to Growth centre/town
- Lot Size
- Density
- Height
- Access –Ingress/Egress
- Sewage -treatment & disposal
- Solid Waste Disposal
- Biological Resources
- Water Resources
- **Climate Change**
- Open Space – amenity areas
- Parking
- Traffic Flow
- **Setbacks** – Roads/gullies/canals/
coastal zone/rivers
- Drainage
- Public consultation
- Protected Areas
- **Public Health**
- **Hazards – Natural/Manmade**
- **Air Quality**
- Infrastructure - Existing & Proposed



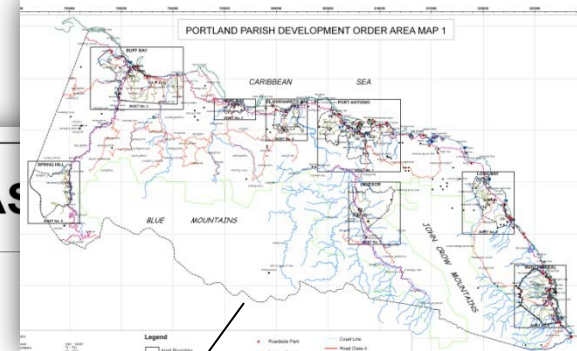
Development Order Areas

DEVELOPMENT ORDER AREAS

TRELAWNY PARISH DEVELOPMENT ORDER AREA MAP 1



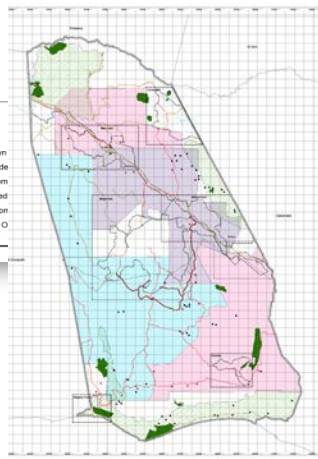
PORTLAND PARISH DEVELOPMENT ORDER AREA MAP 1



NEGRIL GREEN ISLAND DEVELOPMENT ORDER LAND USE PROPOSAL (MAP 1)



MANCHESTER PARISH DEVELOPMENT ORDER AREA (Map 1)



- Legend**
- Class A Roads
 - Class B Roads
 - Area within which the Town
 - Green Area Called in Under
 - Confirmed Development
 - Urban areas covered
 - Provisional Development
 - Draft Development O
 - Parish Capitals

20 40 80 Kilometers

Prepared by: National Environment and Planning Agency
Local Area Planning Branch
10 & 11 Caledonia Avenue, Kingston 5

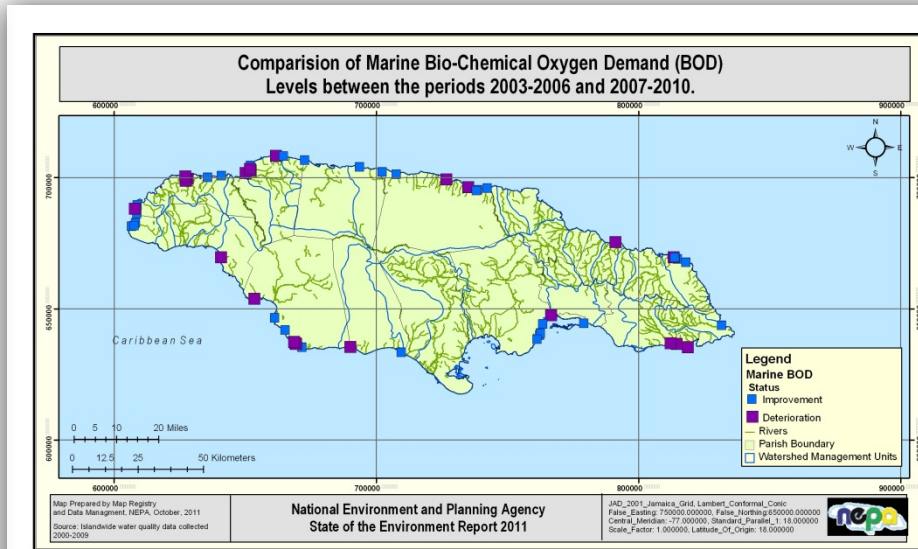
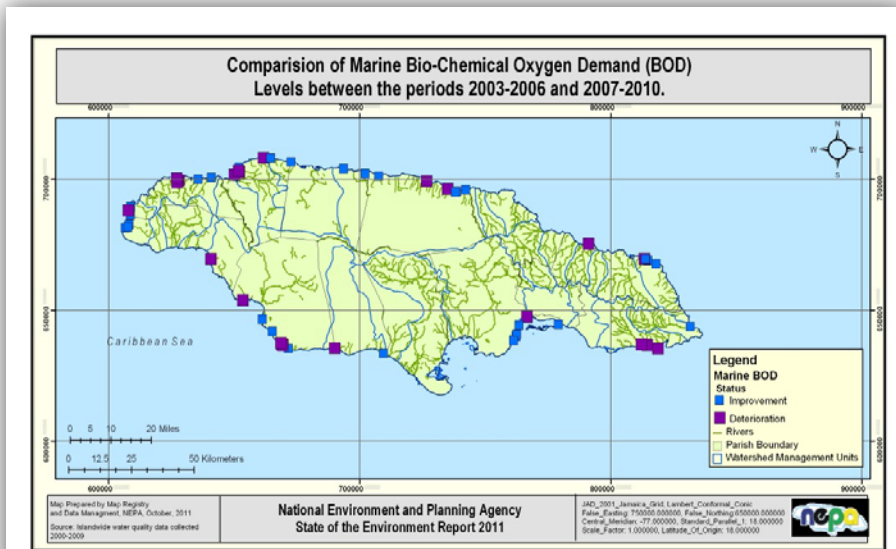
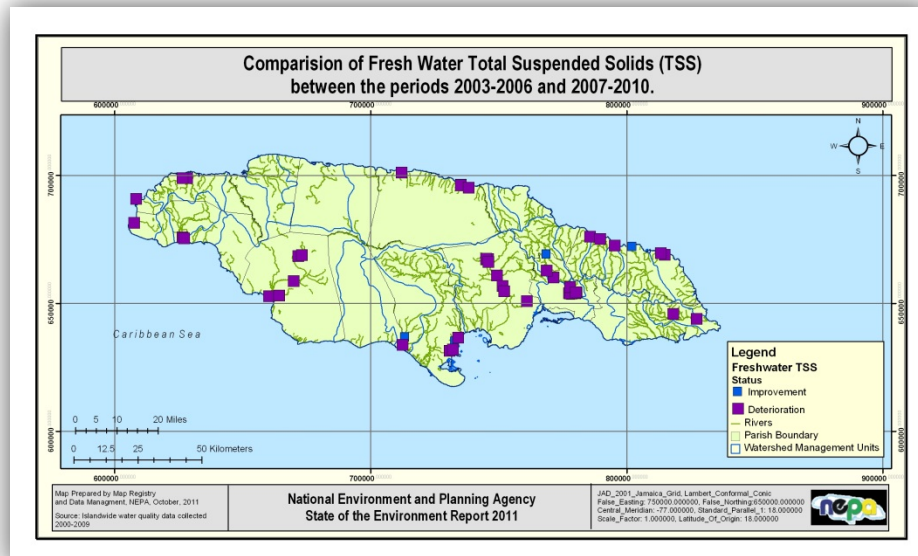
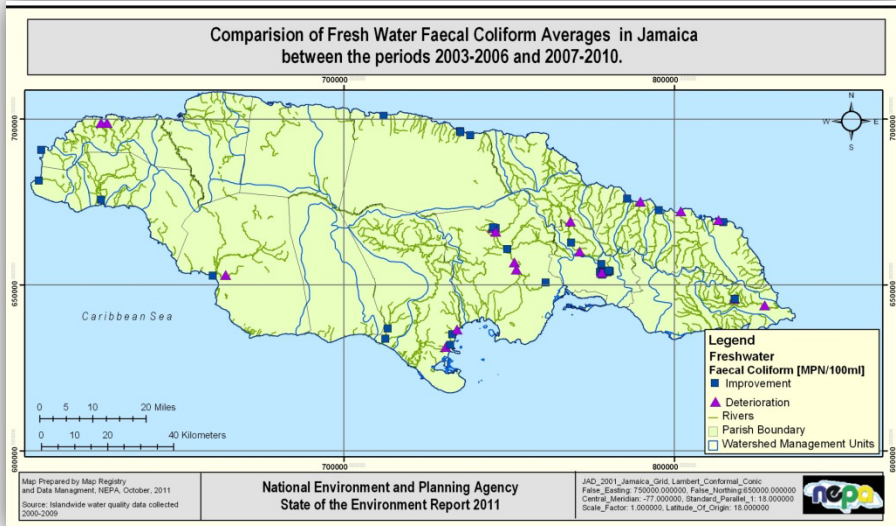


Revised December 2013



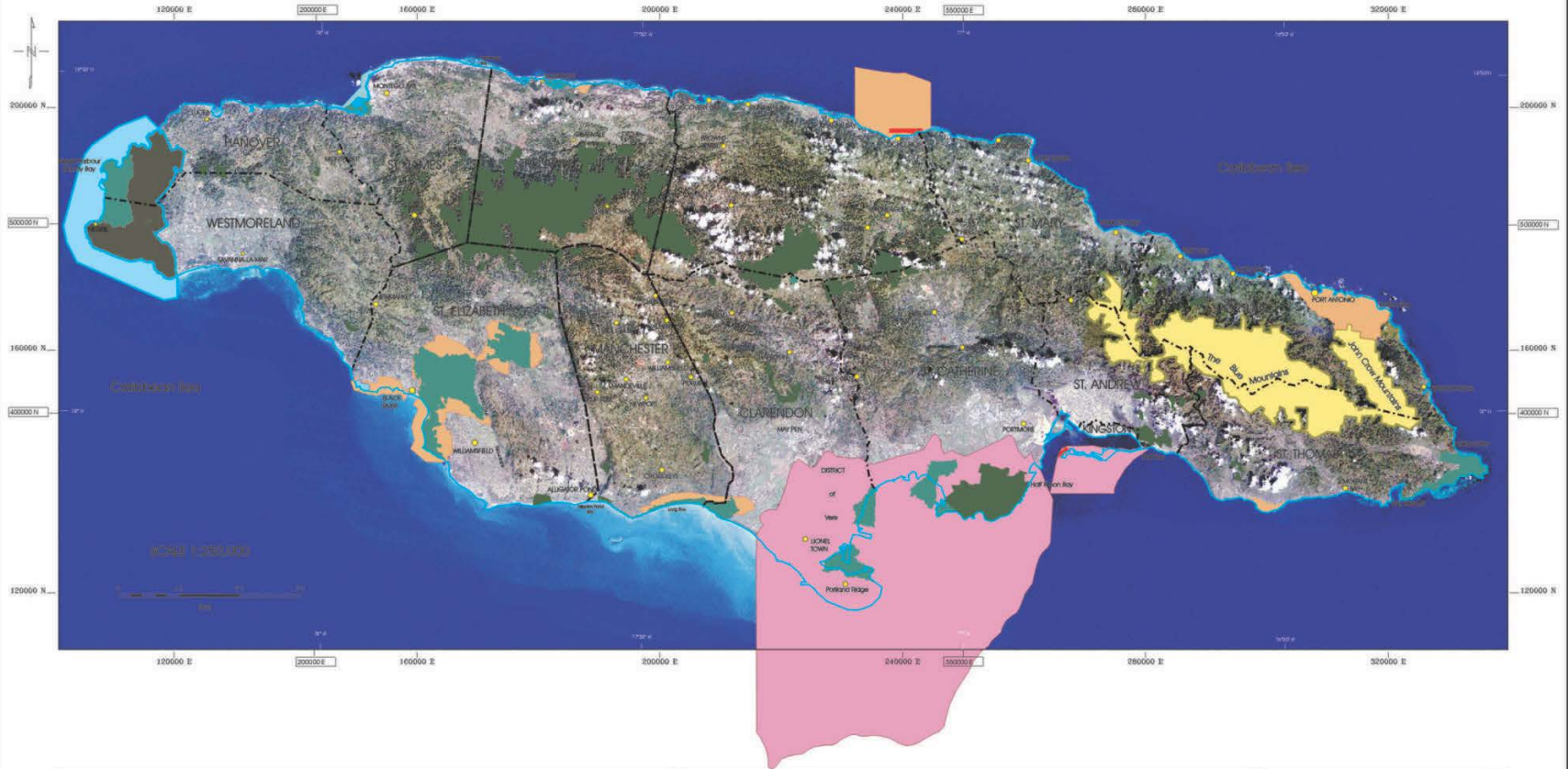
Managing and protecting
Jamaica's land, wood and water

Water Quality Assessment/Profiling



Protected Areas System

PROTECTED AREAS SYSTEM

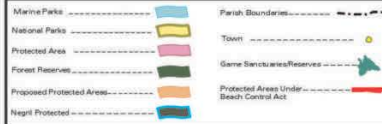


National Parks

These are lands and/or sea managed mainly for the conservation of the ecological integrity of ecosystems. They are also managed for scientific research, education and recreation.

Protected Areas

An area of land and/or sea dedicated to the protection and maintenance of natural and cultural values, and managed through legal or other effective means. These areas do not necessarily exclude industrial or any other type of economic activity.

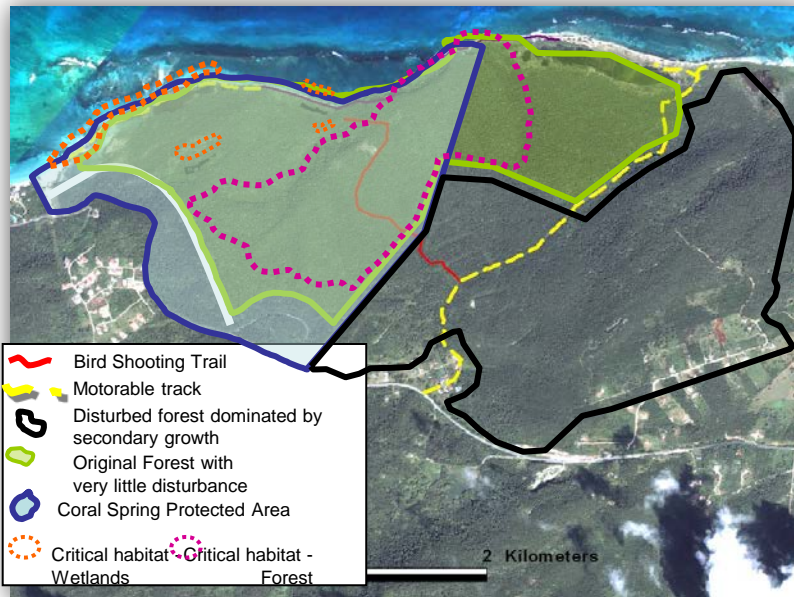
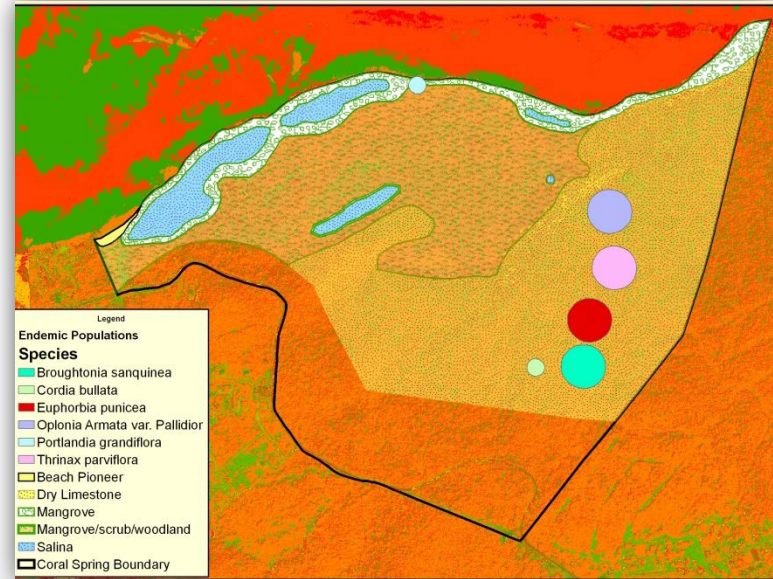
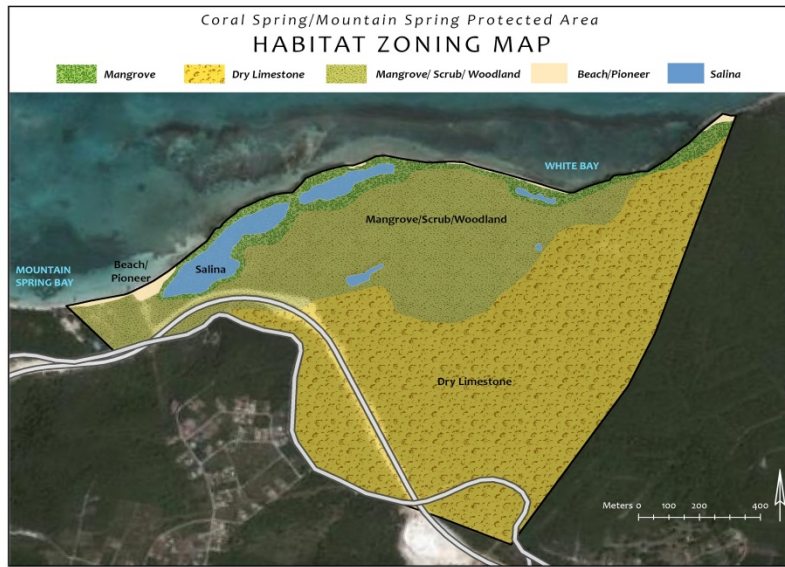


Coordinates in Jamaica Geoplot System
 150000 E
 240000 E

Scale 1:500,000
 Date of Publication: 1998
 Prepared by: NEPA
 Central Meridian: 77° W
 Date of Revision: 1998
 Projection: Lambert Conformal Conic
 False Easting: 250,000 m
 False Northing: 100,000 m
 Spheroid: Everest
 Zone: 18B



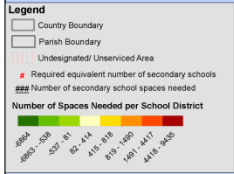
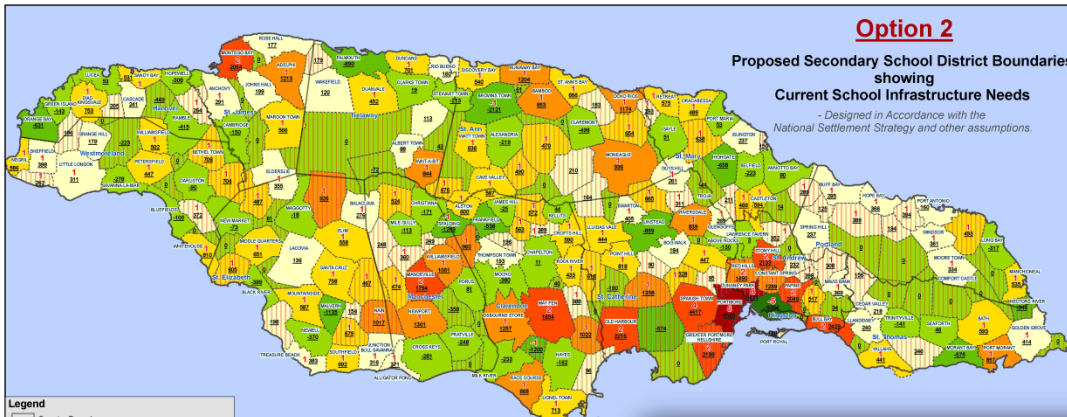
Protected Areas Zoning and Management



Protected Areas Zoning and Management

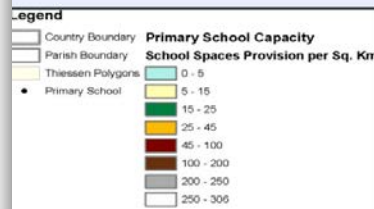
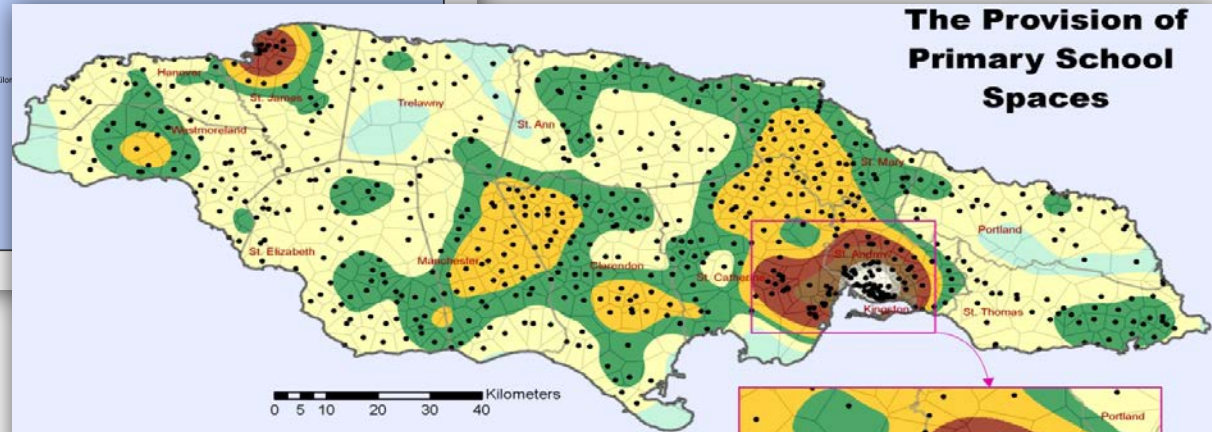


Educational Planning and Forecasting



Assumptions:

- the school district boundaries were defined by applying the District Centre service limit of 5.6km or 10 minutes to each growth centre in the National Settlement Strategy.
- unserviced areas will ultimately be catered for either via transportation improvements or the creation of new growth centres
- each student can utilise only those secondary schools within his/her school district
- the secondary school spaces demanded within a school district are met in full by public school facilities
- all students in the age cohort for Secondary Schools (15-19, based on data limitations) are to be catered for
- there are no Junior High or All-Age Schools (these were converted to primary schools)
- a Secondary School's target size is 1,200 school spaces
- at least 250 spaces should be required to consider erecting a new Secondary School



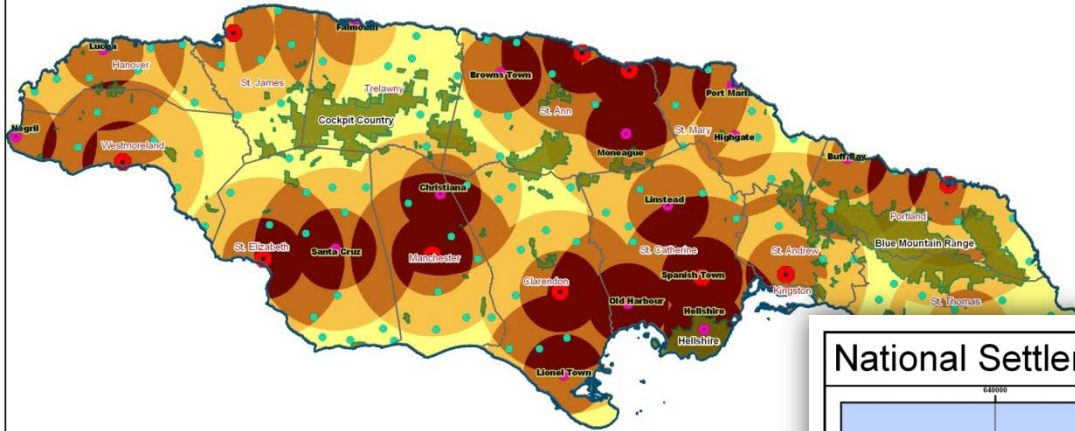
Model Assumptions:

Every primary school services a radius of 3 miles/ 4.8 kilometers. Primary schools within this distance of each other positively influences the provision and utilization of school spaces; the further apart the less the influence

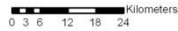
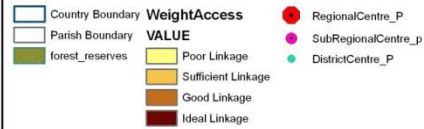
Thiessen Polygons/ Voronoi Diagrams for each primary school represents the location of the school age cohorts to which the facility is closest

Settlement Strategy Planning

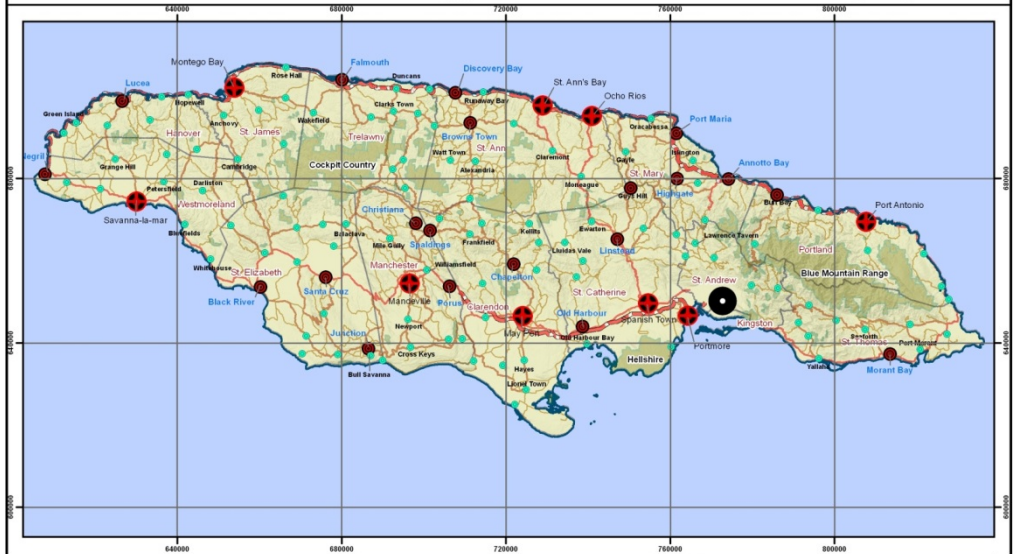
Linkage-Enhanced Zones between Regional and Sub-regional Growth Centres, National Settlement Strategy, X



Legend



National Settlement Strategy Review: 4-Tier Ranking System



Legend

