



Victoria Airport Parking Lot Expansion, 2006

SITE ADAPTIVE PLANNING & DESIGN

PAUL DE GREEFF, RLA. & SCOTT MURDOCH, RLA, R.P. BIO.
MURDOCH DE GREEFF INC. LANDSCAPE ARCHITECTURE

STORM WATER MANAGEMENT

VS.

RAIN WATER MANAGEMENT

from Stormwater Management to RAINwater Management

From TRADITIONAL to

- Drainage Systems
- Reactive (Solve Problems)
- Engineer-Driven
- Protect Property
- Pipe and Convey
- Limited Consultation
- Local Government Ownership
- Extreme Storm Focus
- **Peak Flow Thinking!**

INTEGRATED:

- Ecosystems
- Proactive (Prevent Problems)
- Interdisciplinary Team-Driven
- Protect Property *and* Habitat
- Mimic Natural Processes
- Extensive Consultation
- Partnerships with Others
- Rainwater Integrated with Land Use
- **Volume-Based Thinking!**

Graphic From: Stormwater Planning - A Guidebook for BC

PARADIGM SHIFT?

STORM WATER
AS A
WASTE PRODUCT

VS.

RAIN WATER
AS A
RESOURCE

STORM WATER MANAGEMENT

VS.

RAIN WATER MANAGEMENT

RISK

PROPERTY/
SAFETY

PEAK FLOW
MITIGATION

STORM WATER
MANAGEMENT

+

RAIN WATER
MANAGEMENT



DRAINAGE
SYSTEM:

RISK

+ REWARD
(VALUE)

PROPERTY/
SAFETY

PEAK FLOW
MITIGATION

STORM WATER
MANAGEMENT

+

RAIN WATER
MANAGEMENT

RISK

DRAINAGE
SYSTEM:

PROPERTY/
SAFETY

PEAK FLOW
MITIGATION

+ REWARD

+ HEALTH/
ENJOYMENT

STORM WATER
MANAGEMENT

+

RAIN WATER
MANAGEMENT

RISK

DRAINAGE
SYSTEM:

PROPERTY/
SAFETY

PEAK FLOW
MITIGATION

+ REWARD

+ HEALTH/
ENJOYMENT

+ RESTORATION

STORM WATER
MANAGEMENT

+

RAIN WATER
MANAGEMENT

LANDSCAPE SYSTEMS:

PLANTS

SOILS

DRAINAGE

HABITAT/WILDLIFE
PEOPLE/PROPERTY

GEOLOGY

INFRASTRUCTURE

↑ VISIBLE
↓ HIDDEN

STORM WATER
MANAGEMENT

+

RAIN WATER
MANAGEMENT

LANDSCAPE SYSTEMS:

PLANTS

SOILS

DRAINAGE

HABITAT/WILDLIFE

PEOPLE/PROPERTY

GEOLOGY

INFRASTRUCTURE

RESOURCE

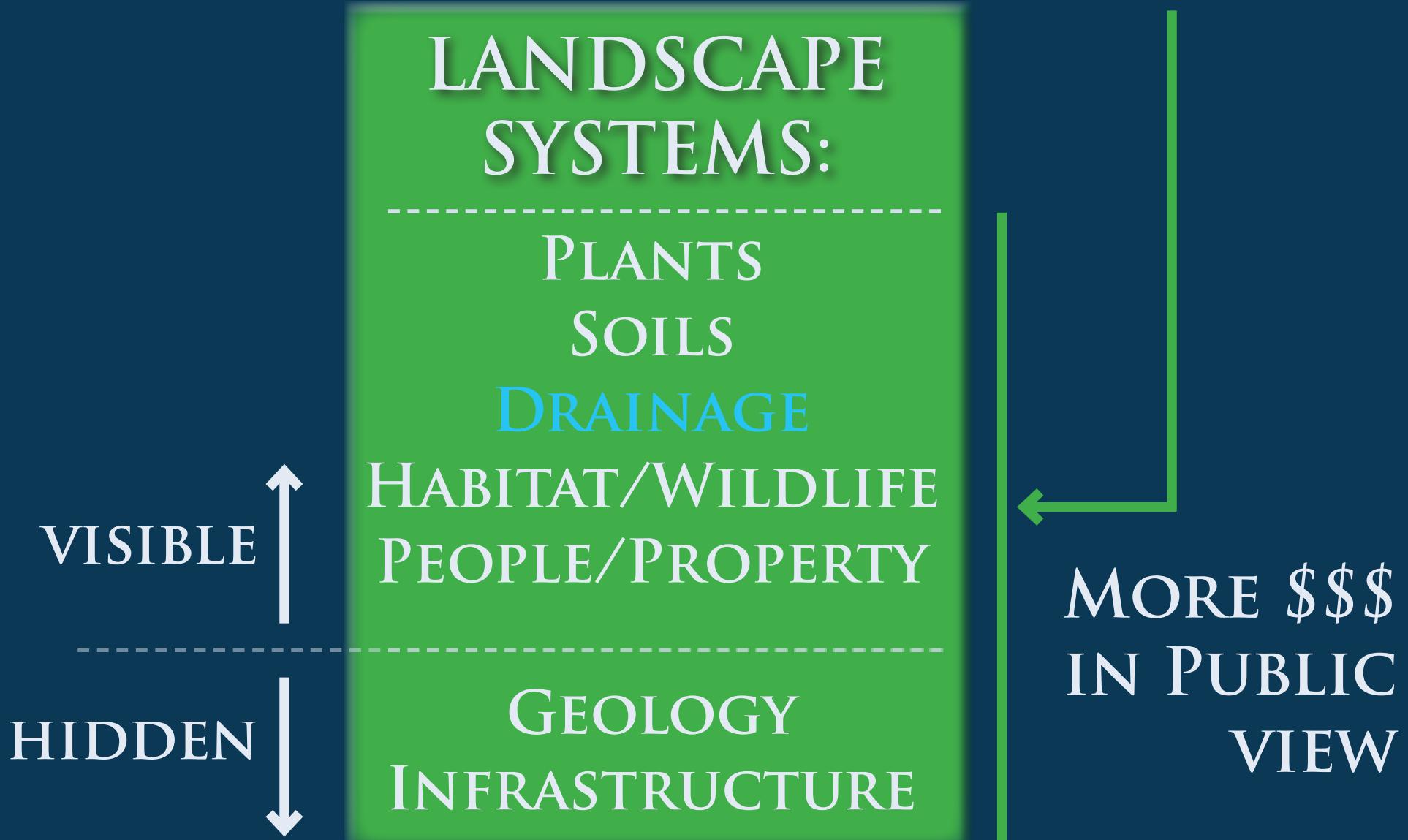
STORM WATER MANAGEMENT

RAIN WATER MANAGEMENT

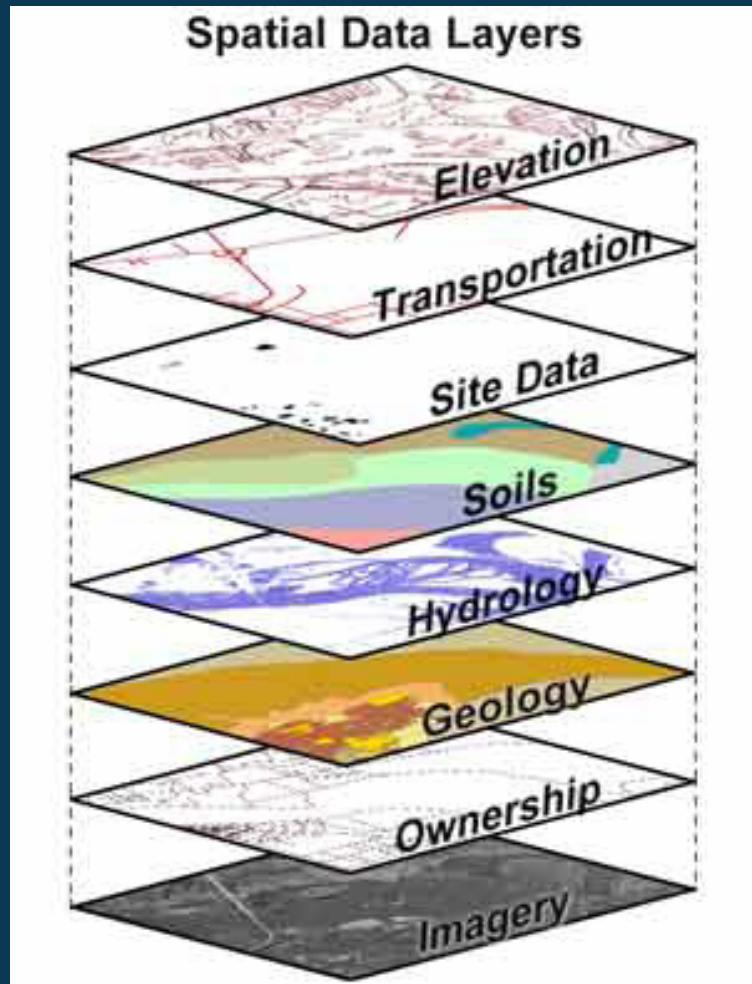


STORM WATER MANAGEMENT

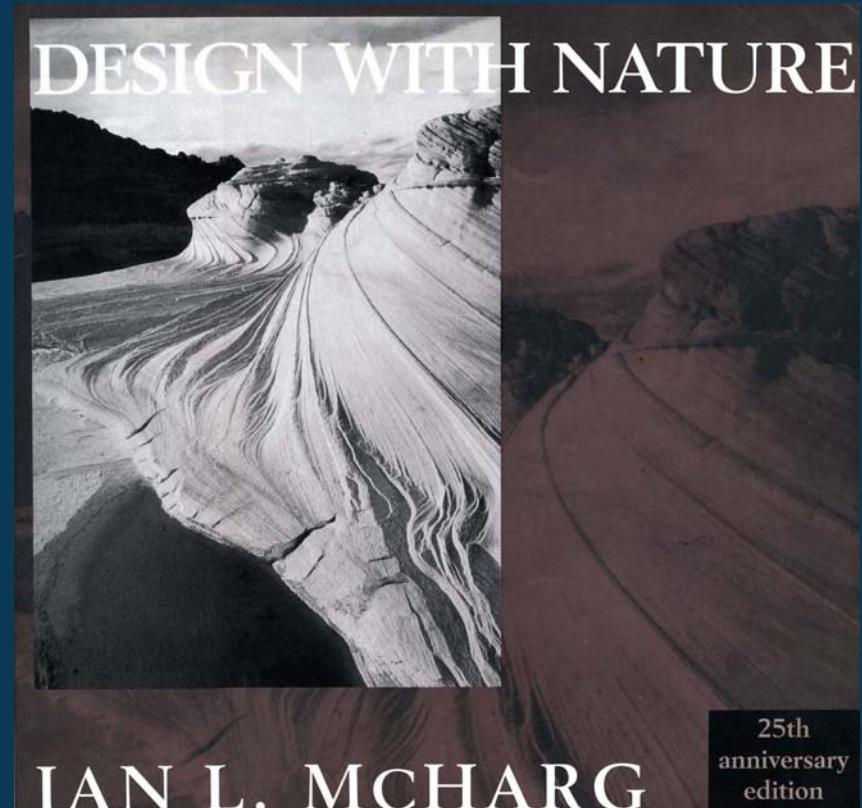
RAIN WATER MANAGEMENT



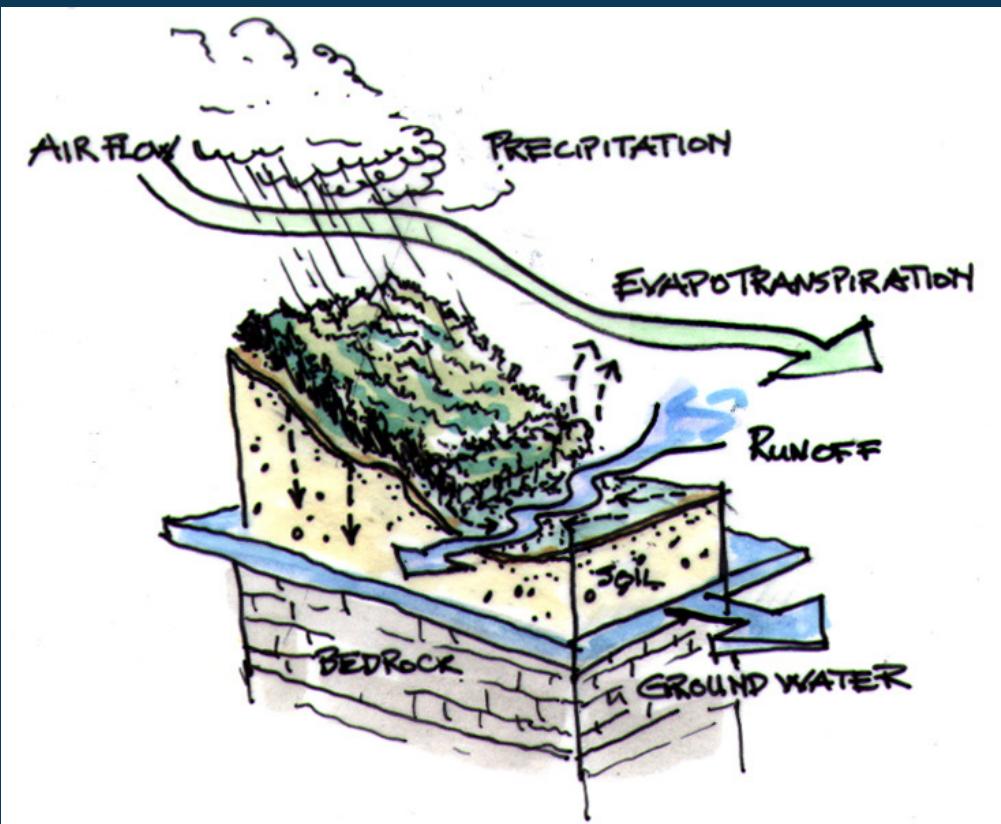
DESIGN WITH NATURE



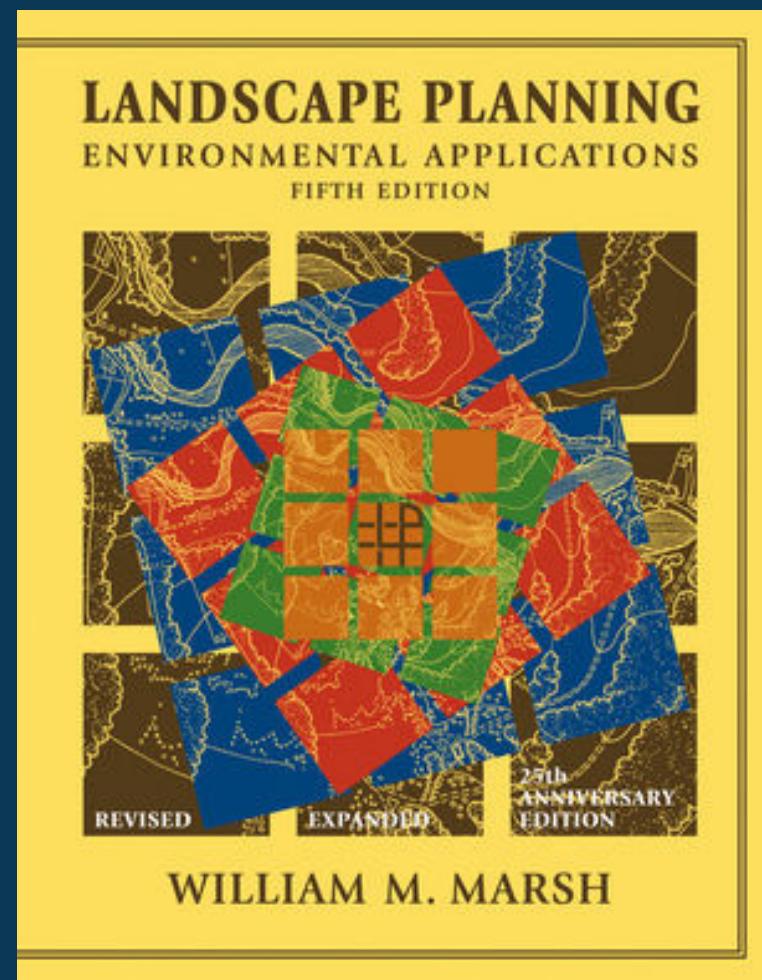
1969
IAN L. MCHARG
MCHARG
(1992 - 25TH ANIV. ED.)



SITE ADAPTIVE PLANNING & DESIGN (SAP/SAD)



MARSH
(2010 - 25TH
ANIV. ED.)



SITE ADAPTIVE PLANNING & DESIGN (SAP/SAD)

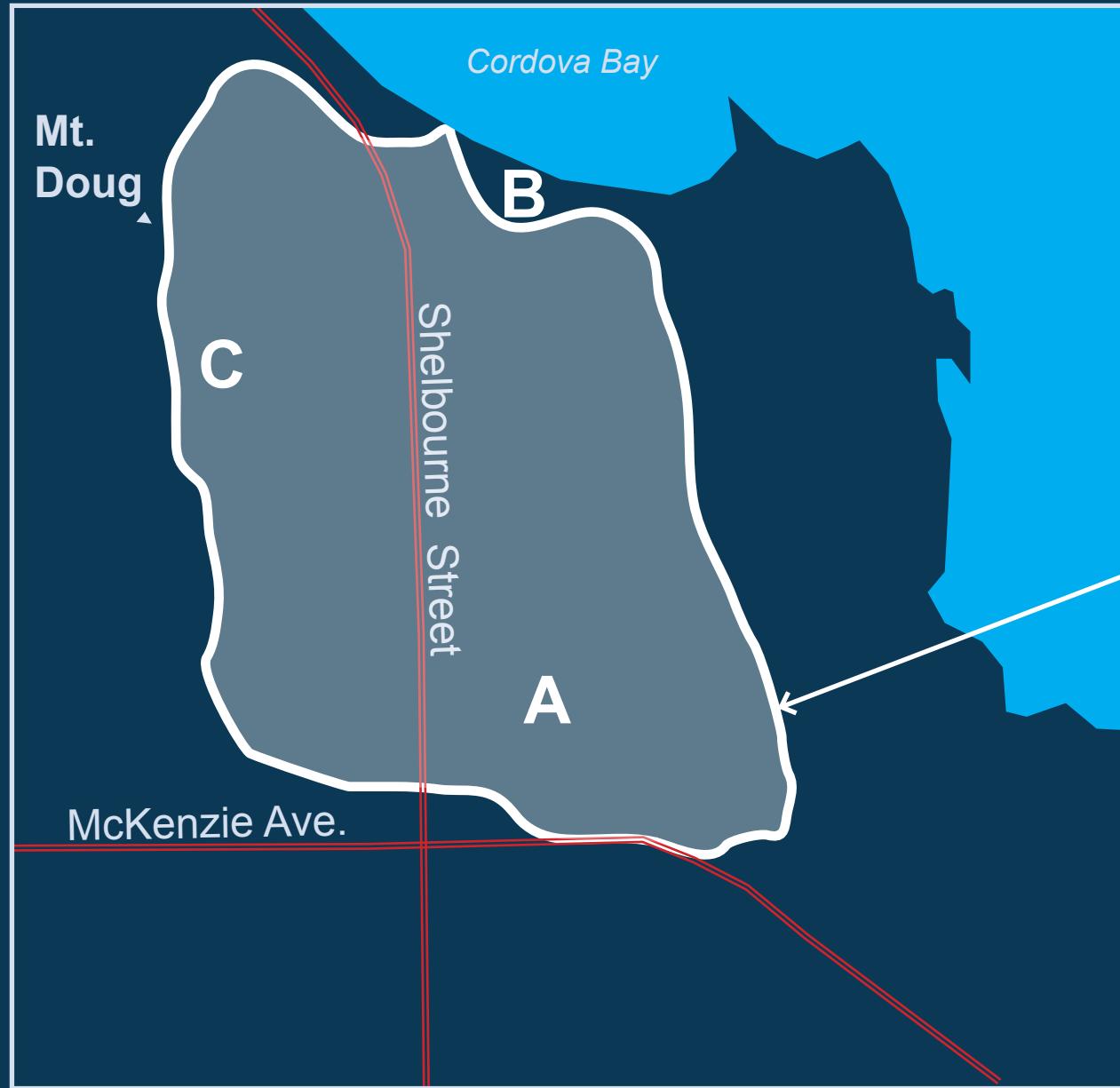
1. PREREQUISITES

2. PROCESS

3. APPLICATION (PROJECT EXAMPLES)

PREREQUISITE:

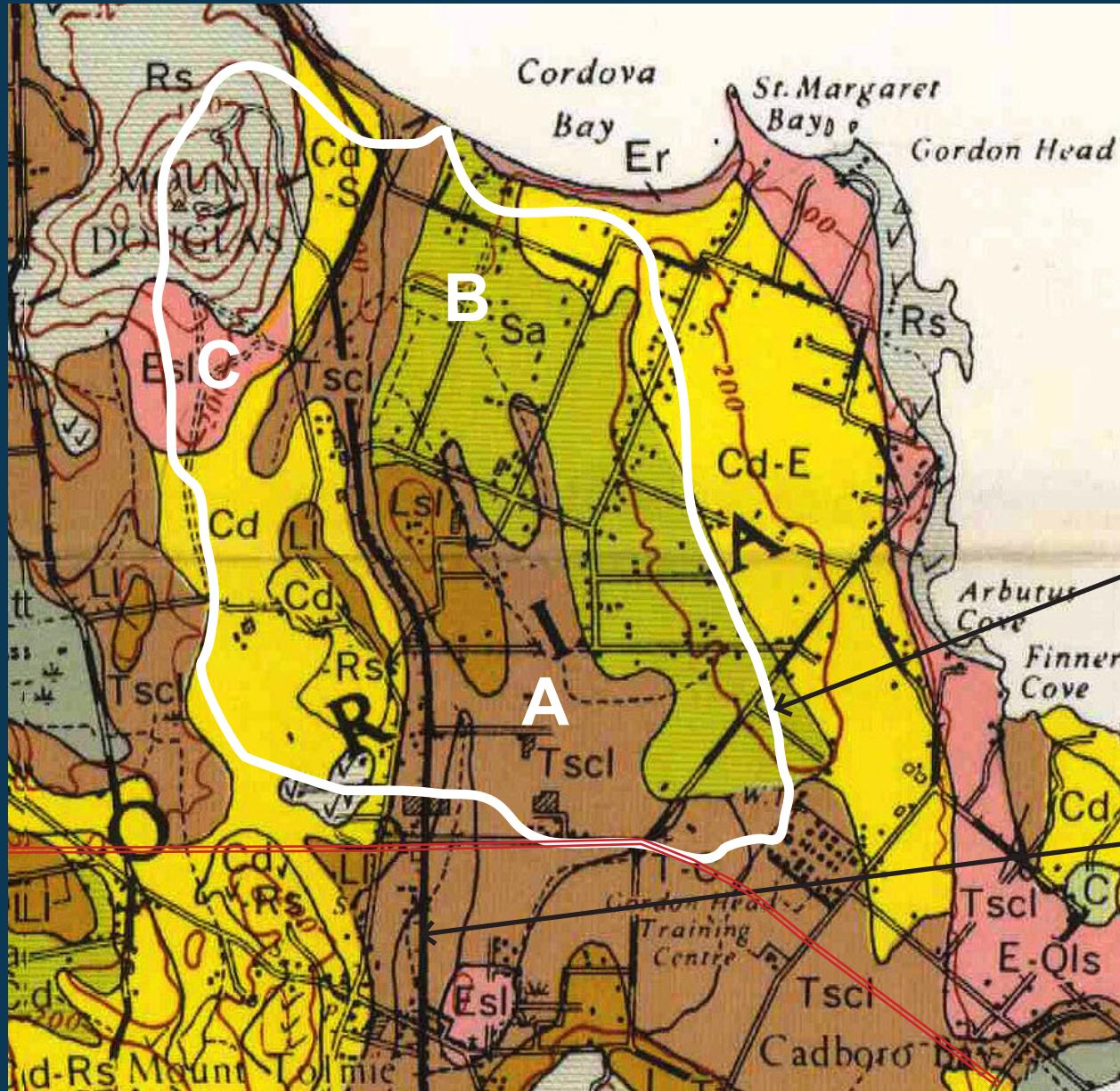
1. CONTEXT - WHERE IN THE WATERSHED?



**Mt. Douglas
Creek
Watershed
Boundary**

PREREQUISITE:

2. CHARACTERIZATION - SITES ARE UNIQUE



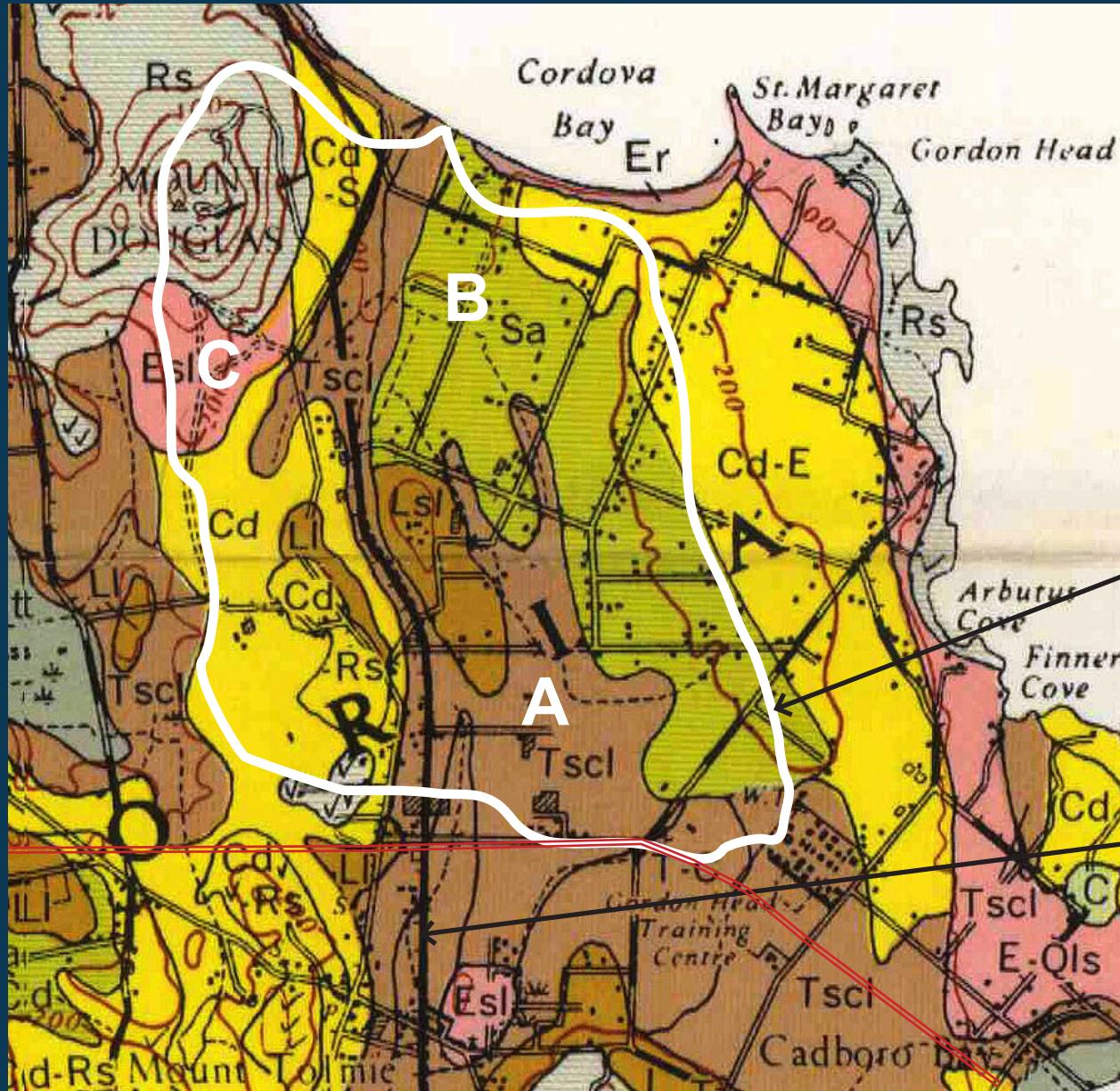
Excerpt: 1959 Soils
Study by
Canada Dept. of
Agriculture

Mt. Douglas
Creek
Watershed
Boundary

Shelbourne
Street

PREREQUISITE:

3. DESIGN - SOLUTIONS ARE UNIQUE



Excerpt: 1959 Soils Study by Canada Dept. of Agriculture

Mt. Douglas Creek Watershed Boundary

Shelbourne Street

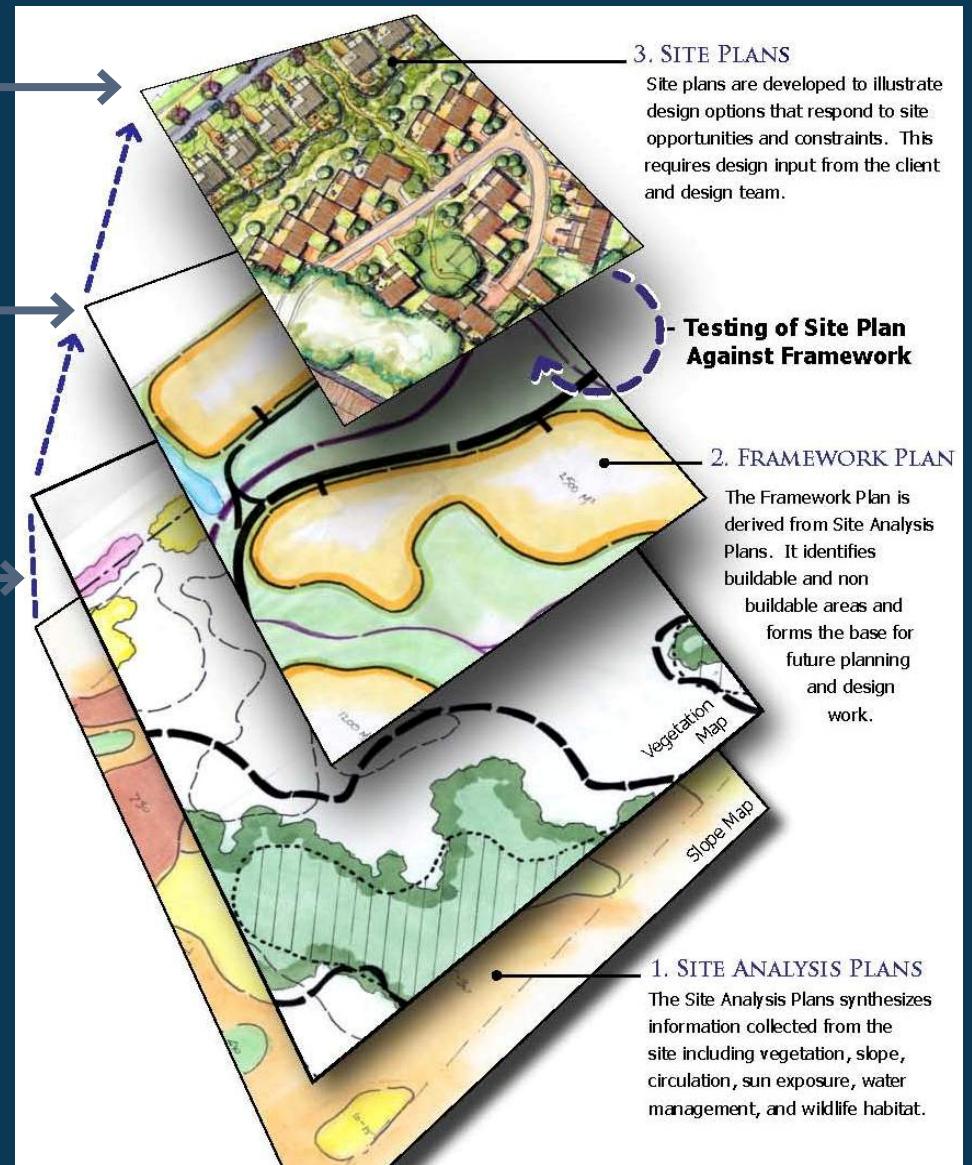
SAP PROCESS:

3. SITE PLANS

2. FRAMEWORK PLAN

1. ANALYSIS PLANS

SITE FRAMEWORK



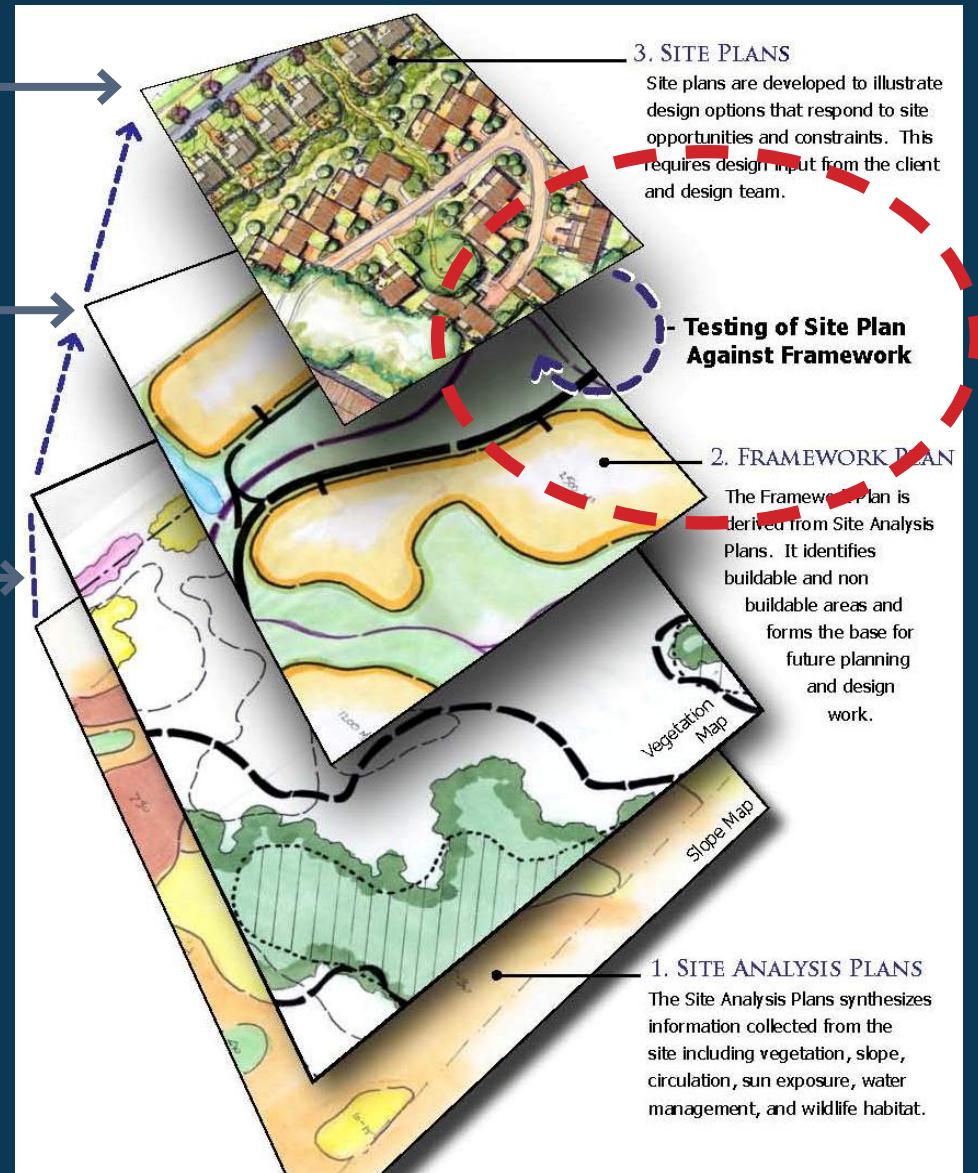
SAP PROCESS:

3. SITE PLANS

2. FRAMEWORK PLAN

1. ANALYSIS PLANS

TESTING



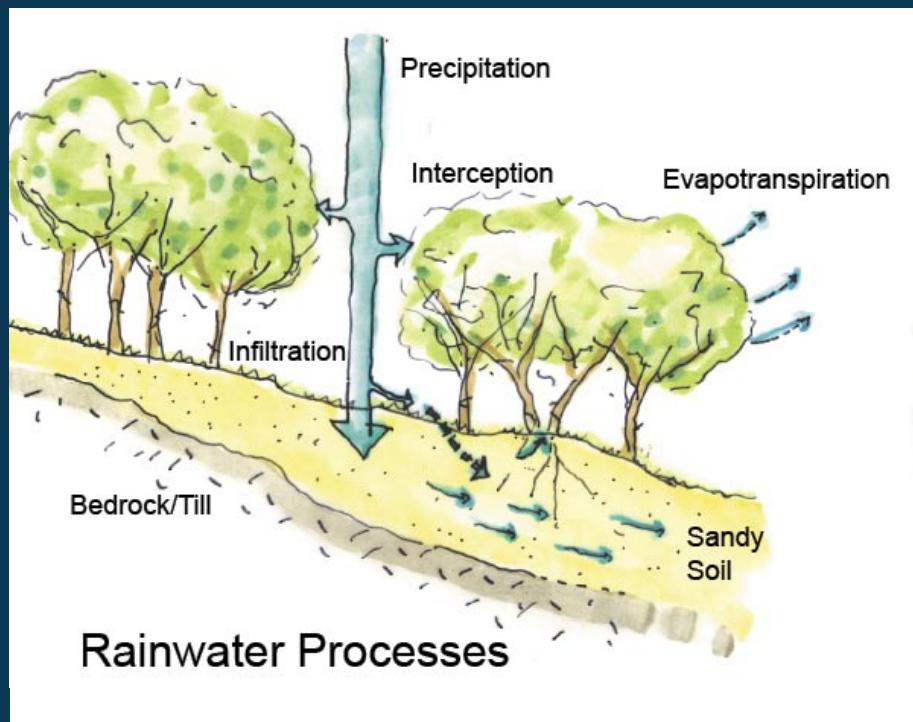
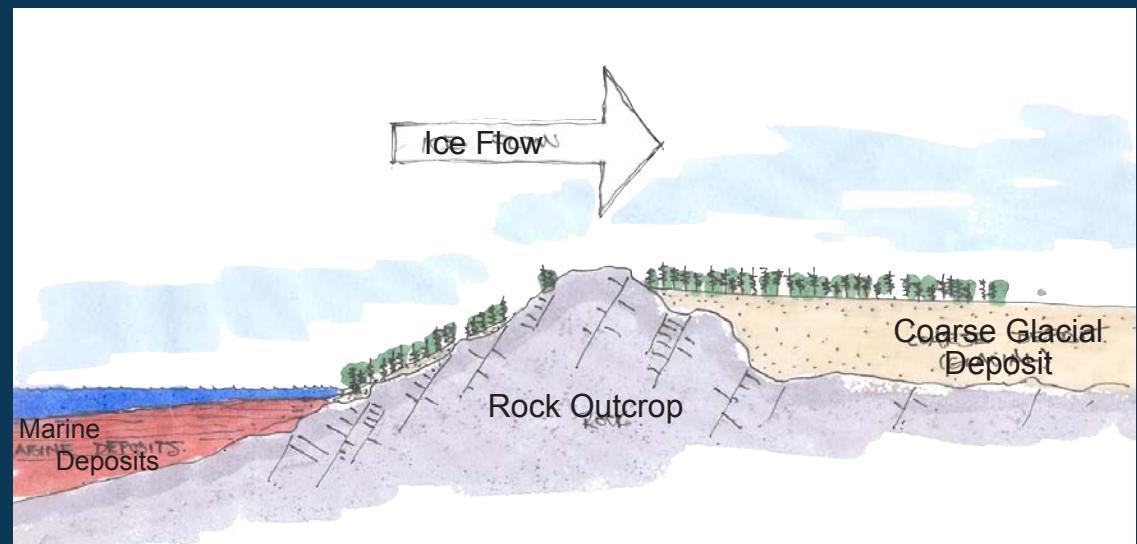
SAP APPLICATION: RAINBOW HILL



RAINBOW HILL

GEOMORPHOLOGY

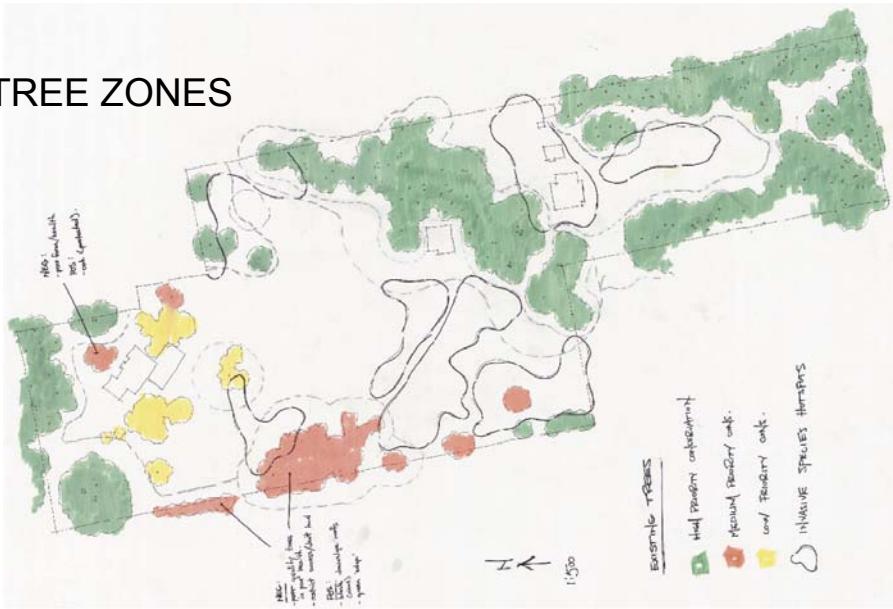
SOILS



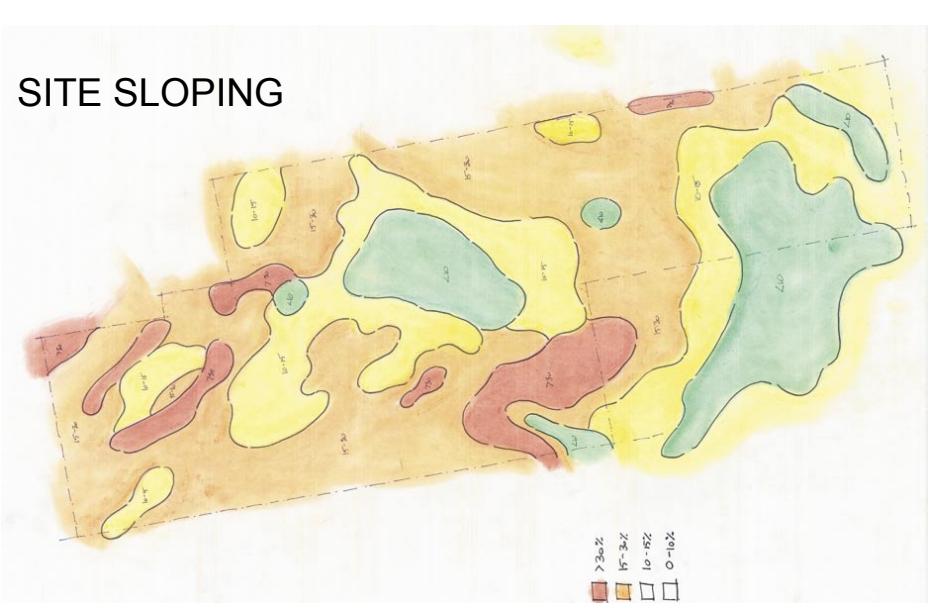
HYDROLOGY

RAINBOW HILL

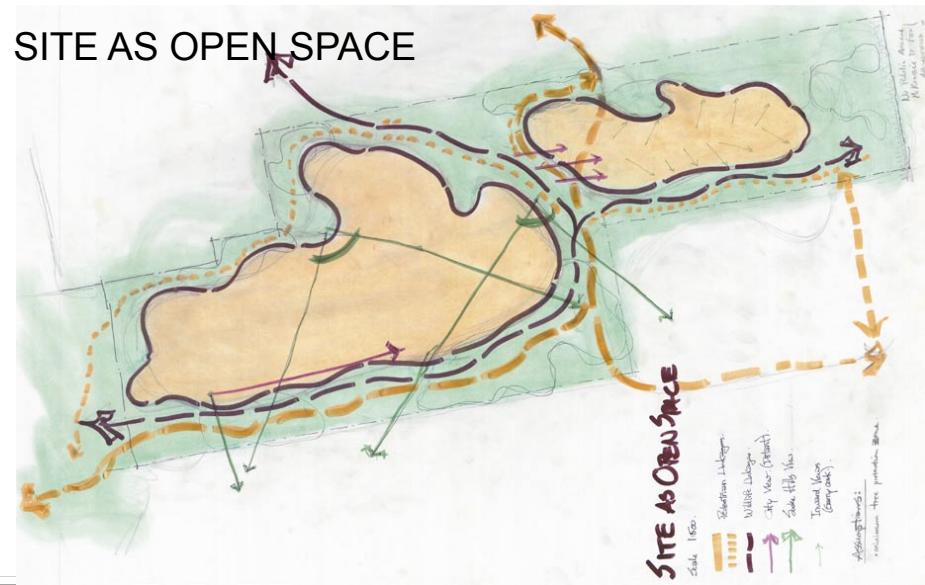
TREE ZONES



SITE SLOPING



SITE AS OPEN SPACE



SITE CONSTRAINTS



SITE ANALYSIS

RAINBOW HILL

Framework Plan: Option 2

Central Open Space Plan

In this development option, the open space is internalized on the site. The pedestrian circulation system is centrally located and provides an alternative route to Rainbow Street. A significant number of buildings are situated on Rainbow Street that could be accessed from a rear lane. They would provide walk up access from Rainbow Road with parking behind. This enables the central area of the site to be retained as open space. The key highlights of this option are:

- Central open space park with buildings tucked into the open space, into the natural landscape.
- Vegetation in central open space will better screen inward views than a vegetation buffer along Rainbow Street (due to slopes)
- Depression area on Rainbow Street retained as stormwater management area and open space.
- Retains all healthy Garry Oaks.
- Orientation mostly south or southwest facing, and
- Buildings surrounded by open space.

The negative aspects of this option are that:

- Roughly 10% less buildable area than option 1,
- More northwest orientation than Option 1,



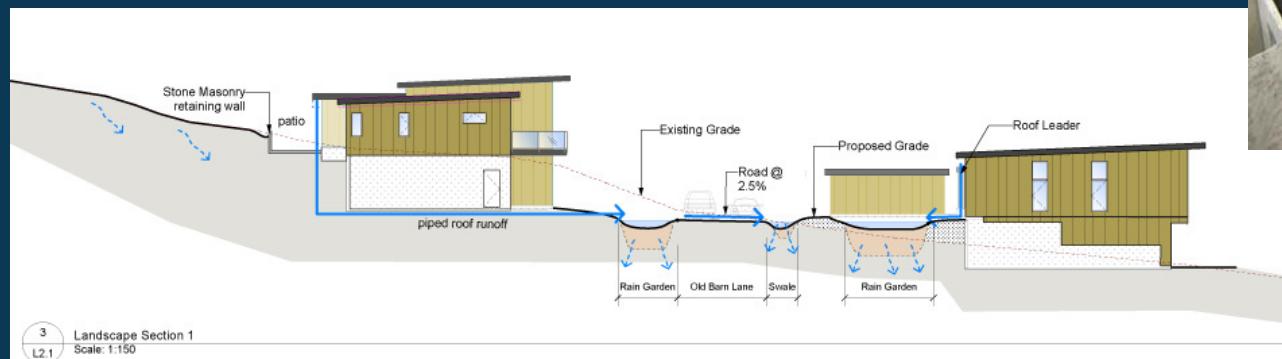
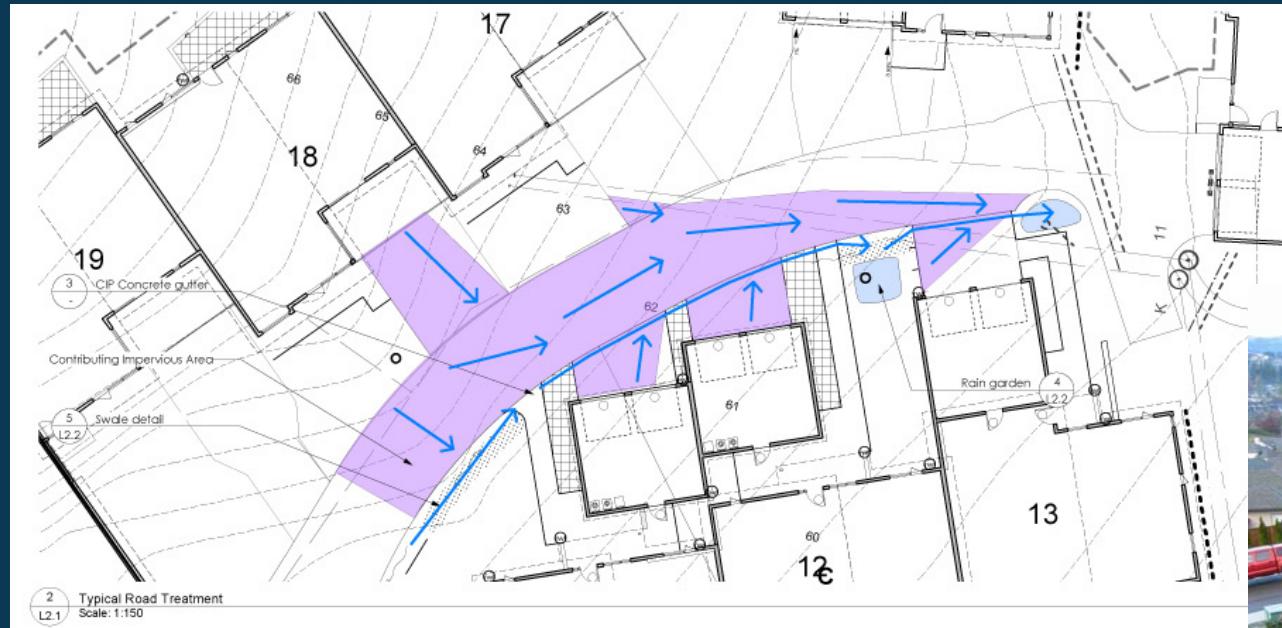
FRAMEWORK OPTIONS

RAINBOW HILL



SITE CONCEPT

RAINBOW HILL

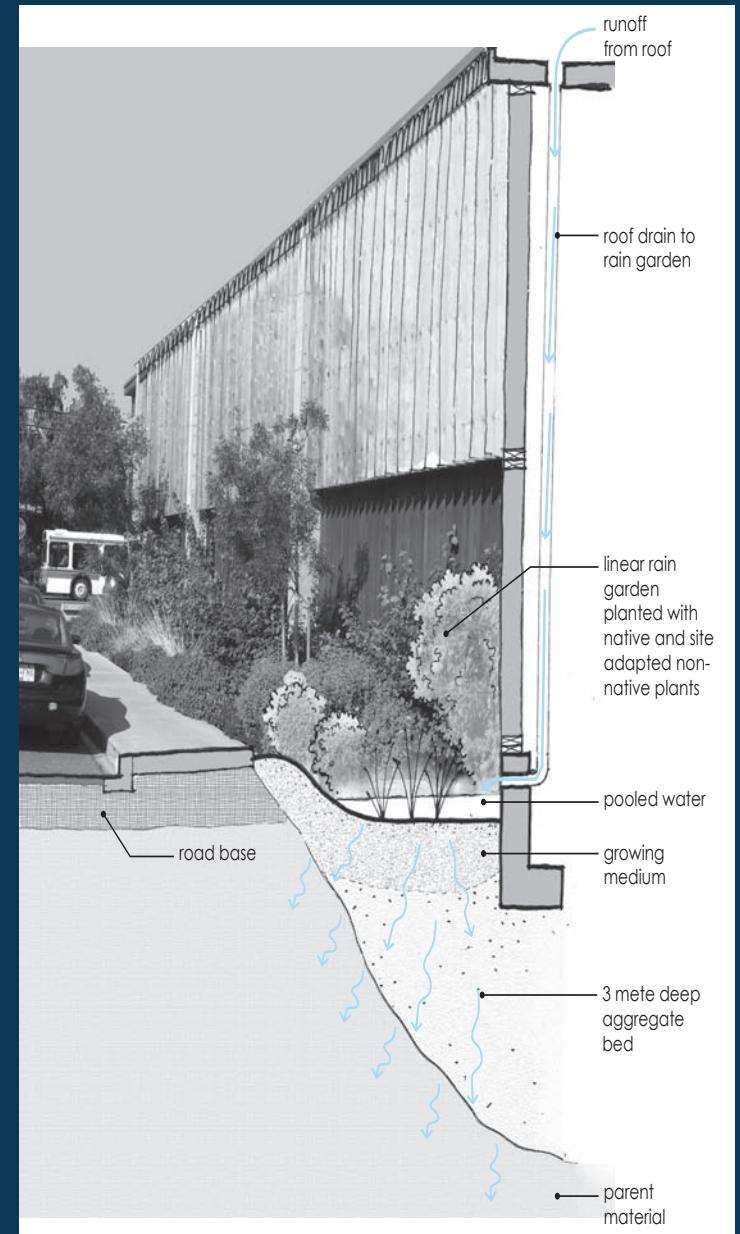
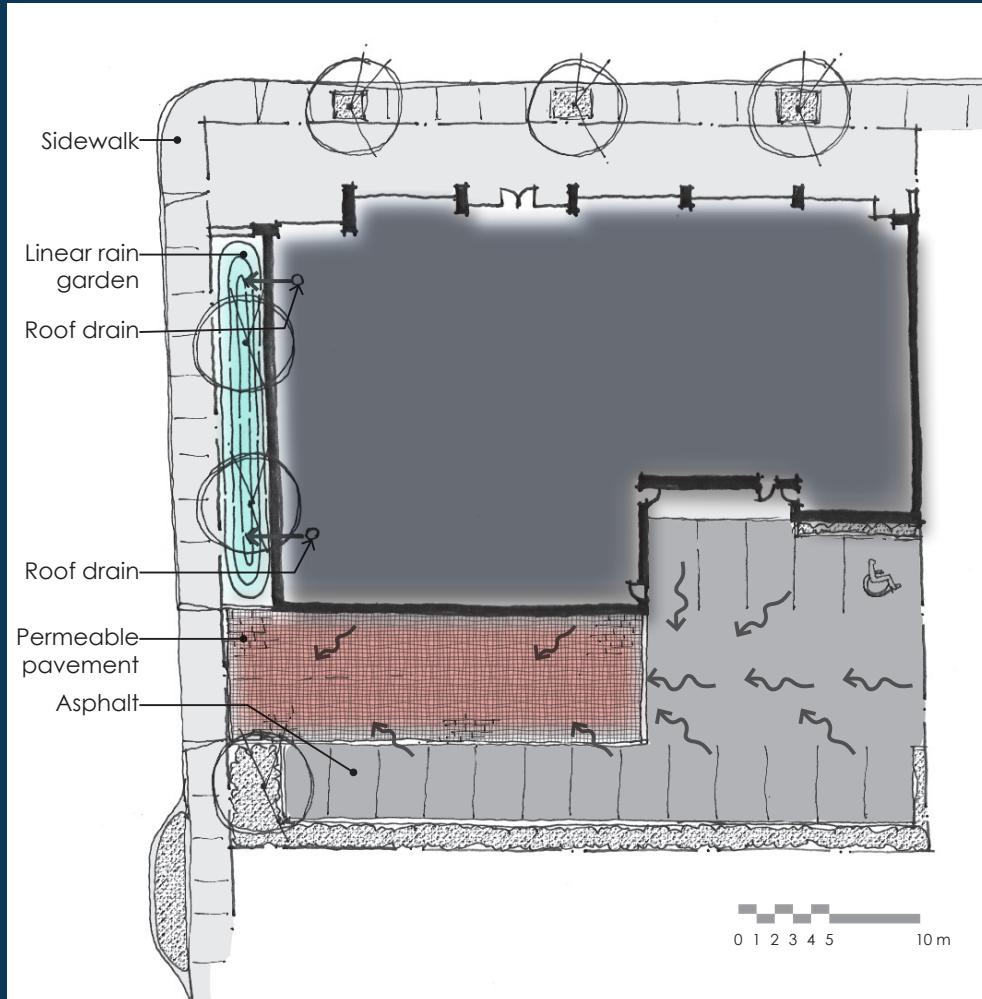


DETAILED DESIGN & TESTING

OAK BAY HOME HARDWARE



OAK BAY HOME HARDWARE



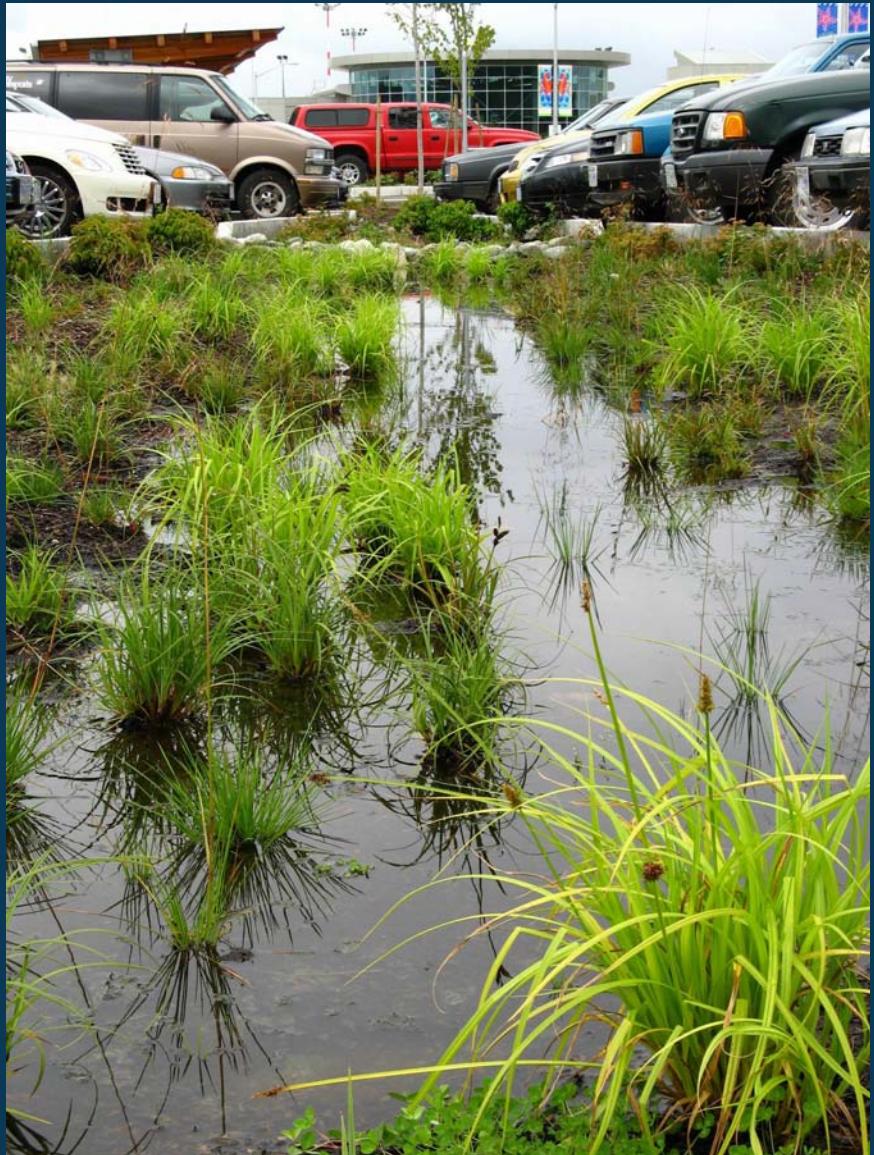
VICTORIA INTERNATIONAL AIRPORT



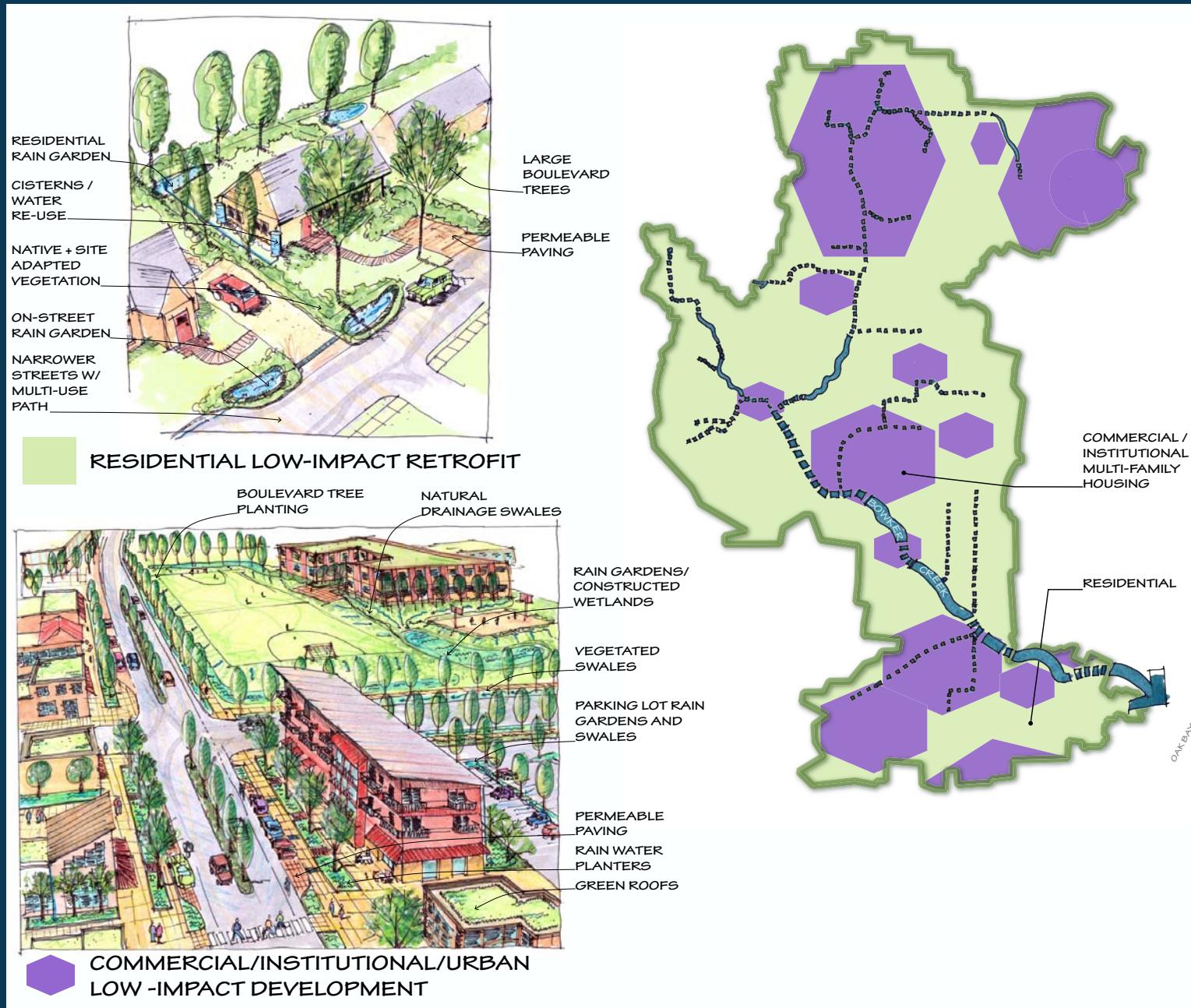
VICTORIA INTERNATIONAL AIRPORT



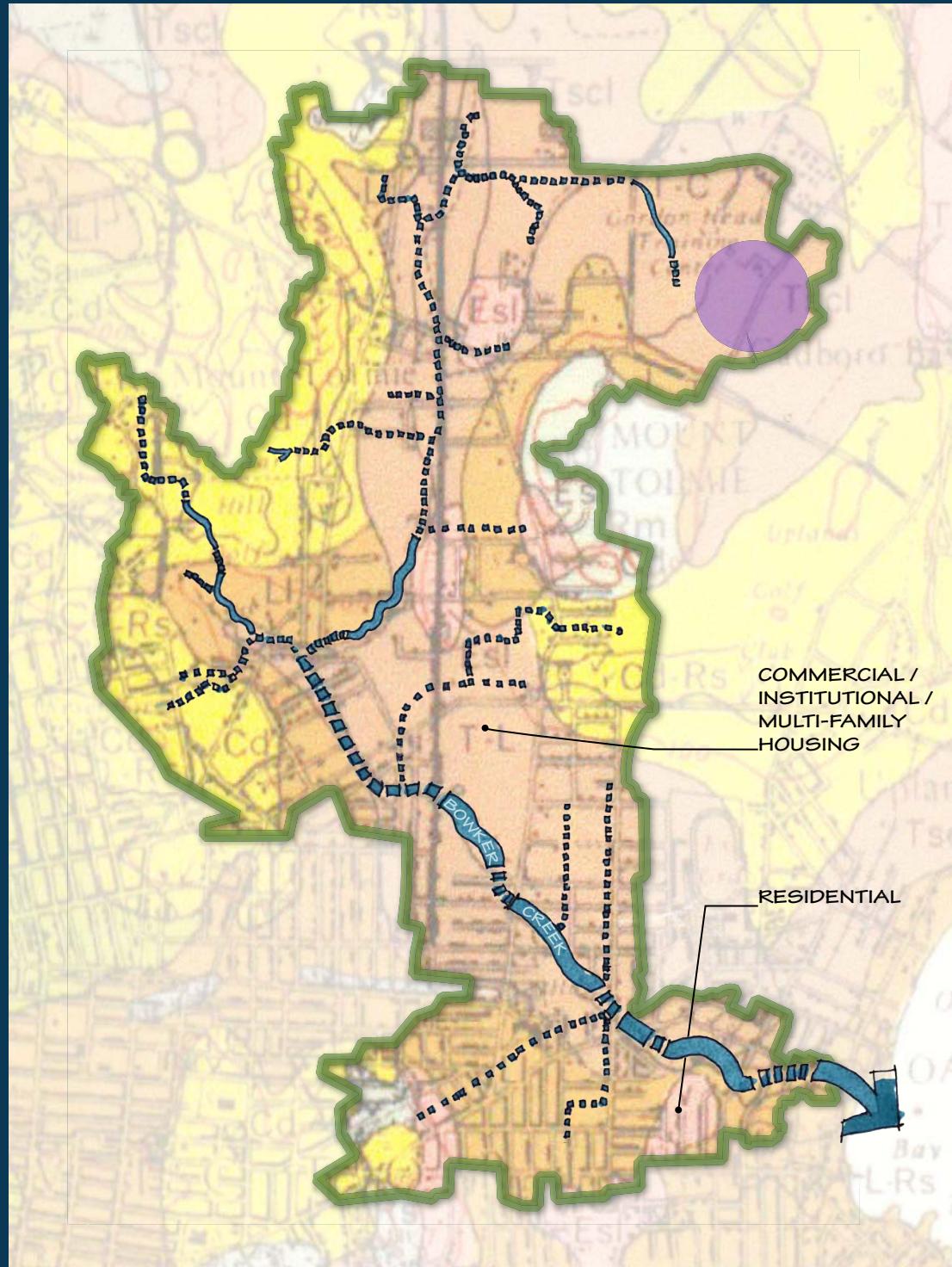
VICTORIA INTERNATIONAL AIRPORT



BOWKER CREEK



BOWKER CREEK



THANK YOU!

www.mdidesign.ca

paul@mdidesign.ca

scott@mdidesign.ca