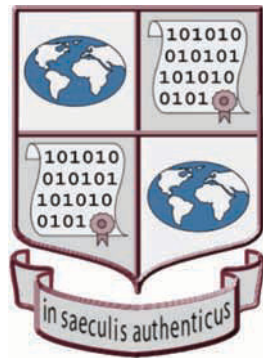


# InterPARES 2 Project

International Research on Permanent Authentic Records in Electronic Systems



## Preserving Electronic Records in the Sciences

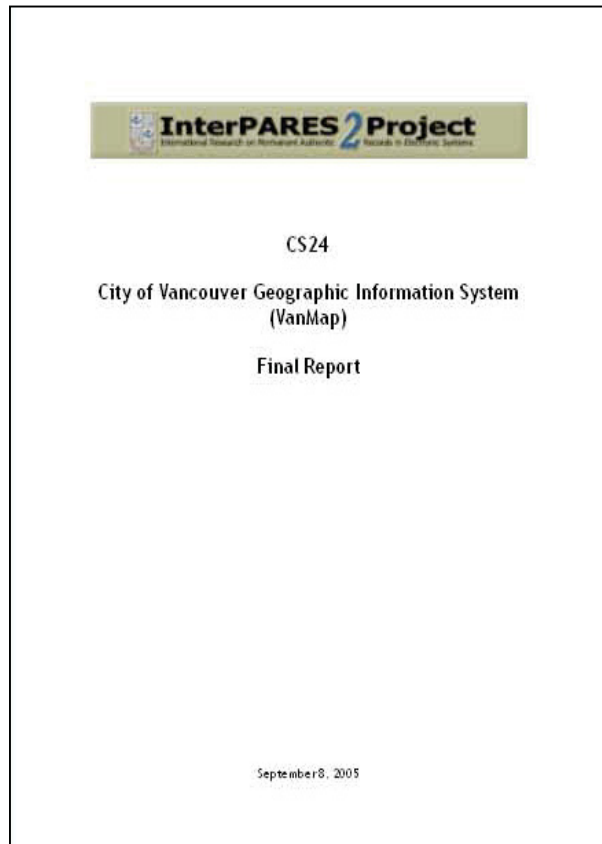
### *VanMap GIS*



**InterPARES Project**

Evelyn Peters McLellan, VanMap Case Study leader

# The VanMap case study



**Glenn Dingwall, City of  
Vancouver Archives**

**Richard Marciano, San Diego  
Supercomputer Center**

**Reagan Moore, San Diego  
Supercomputer Center**

**Evelyn Peters McLellan,  
Insurance Corporation of BC**



# What is a GIS?

- **Geographic Information System**
- Database system containing data linked to geospatial coordinates
- Typically presented to the viewer in the form of interactive maps
- May incorporate files such as CAD drawings, satellite imagery and photographs that are not geospatially referenced



# What is VanMap?

The cross-corporate GIS created by the City of Vancouver and used by staff in

- Engineering
- Planning
- Permits and Licenses
- By-law Enforcement
- Social Planning
- Police
- Fire and Rescue
- Parks and Recreation





Contact Us

Legend Options

### Address Search

Options | Reset | Help

Number

Street

or select

Go

### Toolbox

Right-Click Menu | Help



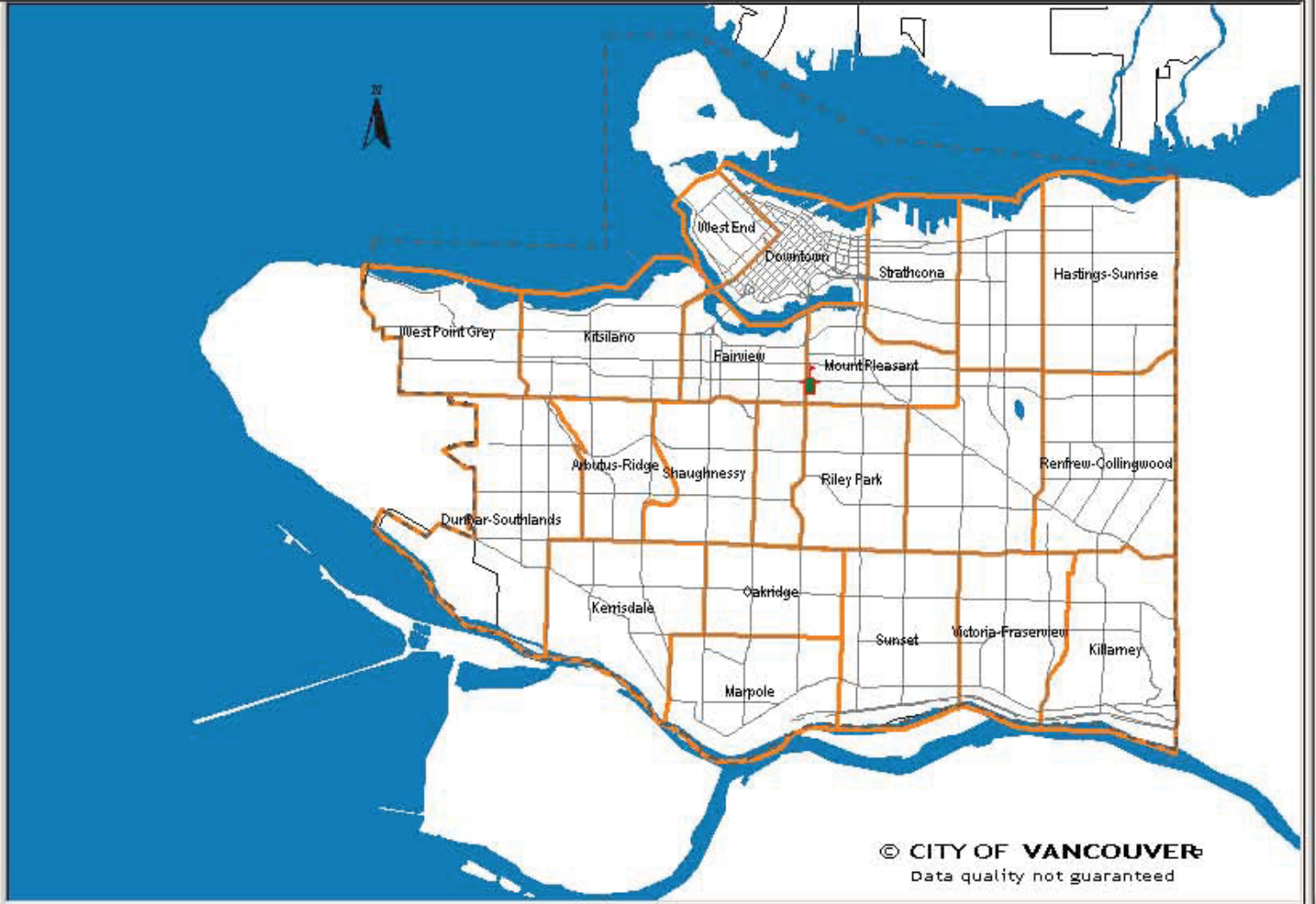
### Help

About the Data

### Applications

Select Application:

- Olympic Venues
- City Boundary
- 
- Public Art
- Public Places
- The Road Ahead
- City Projects
- Child Care Facilities
- Web Cameras
- Non-Market Housing
- City-owned Properties
- Cemetery
- Urban Agriculture
- Contour Lines
- Truck Routes
- Canada Line Alignment
- Traffic Related
- Sewer
- Water
- City Streets Network
- View Cones
- Subdivision Categories
- DCL Areas
- Zoning Districts Types
- Zoning Districts
- Business Improvement Areas
- False Creek Navigable Chan
- Youth
- Property Information
- Facet Grids
- Administrative & Service Area
- Shore Lines (2002)
- Foreshore Contour Line
- Water Bodies

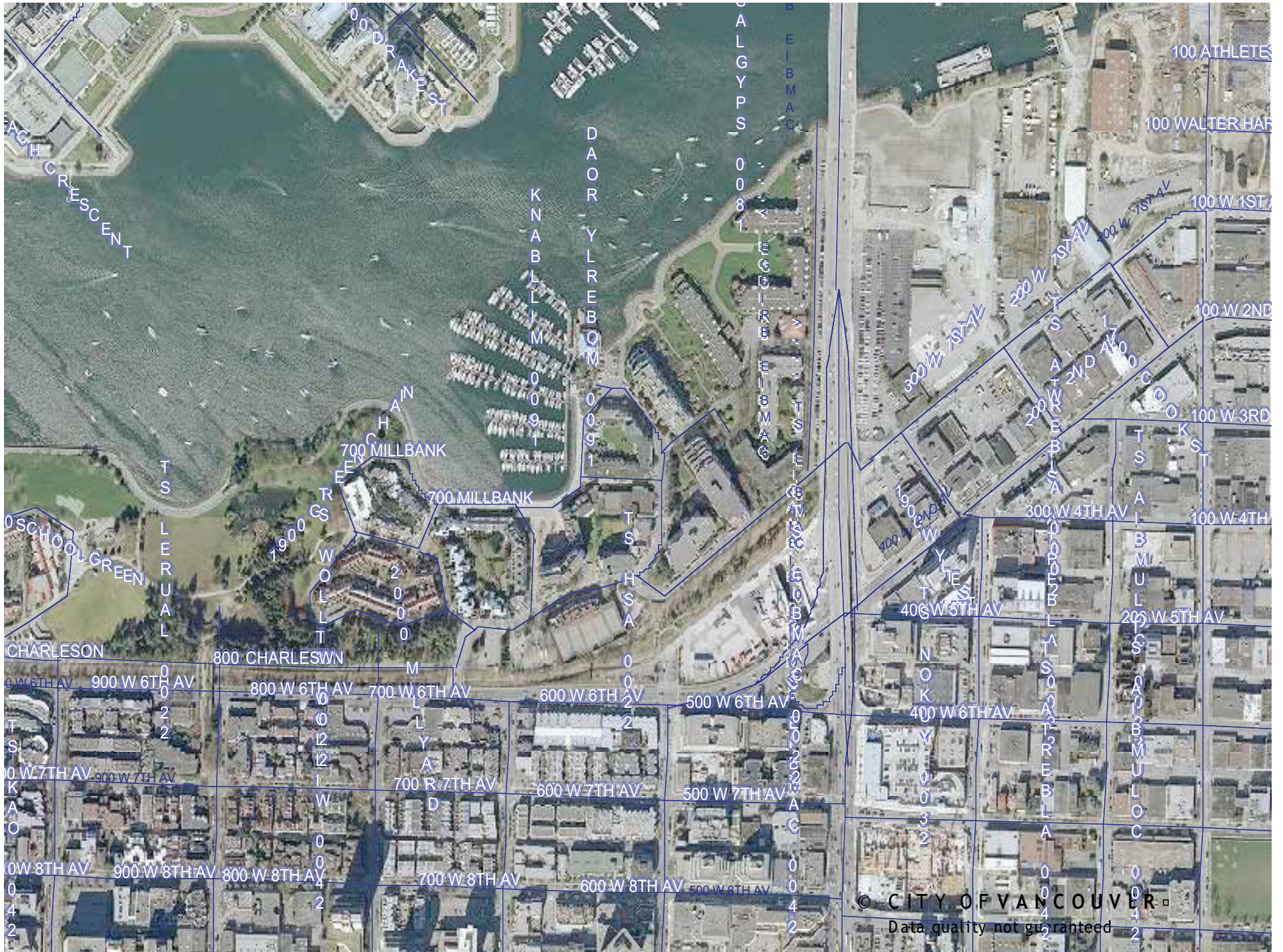


© CITY OF VANCOUVER  
Data quality not guaranteed

Water Bodies : Strait of Georgia      0 feature(s) selected      1 : 109,043      14.4 x 10.0 (mi)





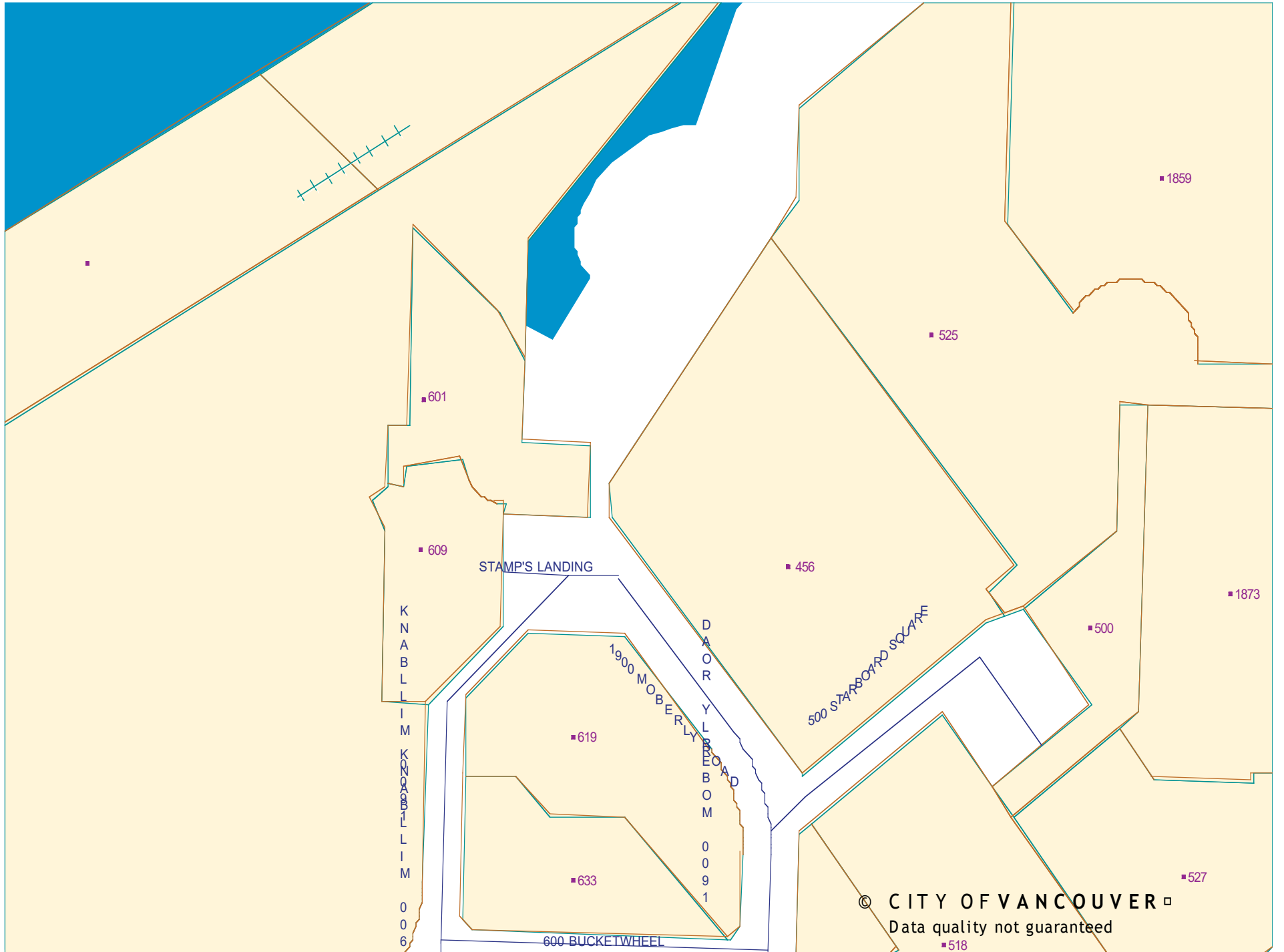






© CITY OF VANCOUVER  
Data quality not guaranteed  
518





© CITY OF VANCOUVER

Data quality not guaranteed



Print date: 13-Feb-07,01:52 PM

## Tax Attributes Report

Source: The city's Property Tax System. (see [About Data](#) for the latest update.)

Record	PID or Strata Plan Number	Assessment Roll Number (Folio)	From Address Number	To Address Number	Street Name	Property Postcode	Lot	Block	District Lot	Plan	Legal Description	Previous Year Land Value(\$)	Previous Year Improvement Value(\$)	Current Year Land Value (\$)	Current Year Improvement Value(\$)	Assessment Year
	VAS1831	164632770001		601	STAMPS LANDING	V5Z 3Z1	1		FC	VAS1831	LOT 1 PLAN VAS1831 DISTRICT LOT F C NEW WESTMINSTER AN UNDIVIDED 795 /808 SHARE IN THE COMMON PROPERTY T HEREIN EX PLAN 18514, 18515, & 1851 6.	570000	1124000	584000	1135000	2005
	VAS1831	164632770002		601	STAMPS LANDING	V5Z 3Z1	2		FC	VAS1831	LOT 2 PLAN VAS1831 DISTRICT LOT F C NEW WESTMINSTER AN UNDIVIDED 13/ 808 SHARE IN THE COMMON PROPERTY TH ERIN EX PLAN 18514, 18515, & 18516 .	1200	39600	7800	40000	2005



**[Vancouver Marijuana Grow-op Slide  
omitted for privacy and security reasons.]**

# VanMap technical components

- Oracle Spatial database
- Other databases
- CAD drawings, satellite imagery, photographs, html pages
- Autodesk MapGuide
- Autodesk ActiveX Viewer
- Application servers
- Web server





# A dynamic system

- Some data are overwritten without being saved
- The data are viewed as maps but these views are not saved
- New layers are being added all the time



# Is VanMap preservable?

- Yes, if we introduce fixed form and stable content
- We need to configure the system so that as each layer is updated it is saved rather than overwritten
- Then we need to develop a means of reproducing VanMap as it was on any given date





# Building a preservation environment...

- Step 1: save the layers
- Step 2: add metadata to the layers
- Step 3: store the data in a secure environment
- Step 4: create infrastructure independence
- Step 5: migrate to new/neutral technology platforms
- Step 6: reproduce VanMap



# ...using data grid technology

- Software developed by San Diego Supercomputer Center to manage large volumes of data
- Implemented as the Storage Resource Broker (SRB) which manages several large data repositories



# Data grid technology

- Manages data and their associated metadata



# Data grid technology

- Manages data and their associated metadata
- Separates the data from dependence on original creating infrastructure





# Data grid technology

- Manages data and their associated metadata
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- Maintains audit trails of all operations performed on the data



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- **Manages access and retrieval**



# Data grid technology

- Manages data and their associated metadata
- Separates the data from dependence on original creating infrastructure
- Maintains audit trails of all operations performed on the data
- Manages access and retrieval
- Supports migration of data to new platforms



# Data grids and VanMap

## The scenario:

- Data grid is inserted between the data storage systems and the access applications
- Each saved layer within the GIS is independently registered in the data grid
- Date-based queries are used to reproduce VanMap layers





# Testing the data grid

## The test:

- Selected data transferred from Vancouver to San Diego Supercomputer Center
- Data stored in technological environment similar to original environment
- Data registered in an SRB data grid
- Data queried for specific dates
- Queried data loaded into a different GIS product



# Testing the data grid

## VanMap Background Data:

- ***Majorstreets*** 5/1/04
- ***Webcam*** 3/21/04
- ***Can\_wat*** 1/1/05
- ***Parcels*** 1/1/06
- ***Cityline*** 1/1/06
- ***Cityhall*** 1/1/06
- ***Sealine*** 1/1/06
- ***Shoreline*** 1/1/06



# Testing the data grid

## VanMap Temporal Data:

- ***ParkingMeterLines***
  - 1/1/2003
  - 1/1/2004
- ***ParkingMeterPoints***
  - 2/1/2002
  - 2/1/2004
- ***Streets***
  - 6/1/2003
  - 6/1/2004
- ***Zoning***
  - 11/4/2004
  - 11/30/2005



# VanMap Demo

## Query Date

Month:  Day:  Year:

Submit

- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005**
- 2006



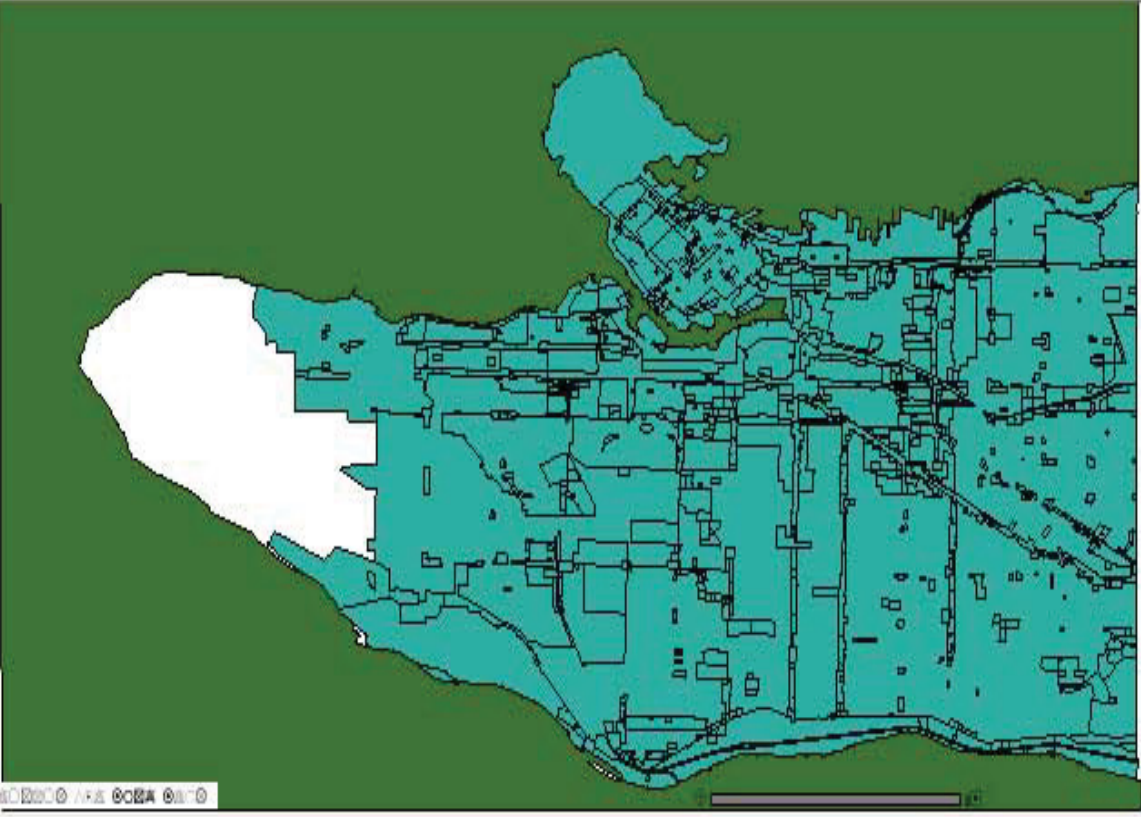
VanMap Demo - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print

Address <http://cuahsi001.sdsc.edu/website/mapviewer1/viewer.htm?theTitle=%27VanMap+Demo%27&esriBlurb=%27%27>

Google Search 19 blocked Check AutoLink AutoFill



Done Internet

http://cuahsi001.sdsc.edu - La...

- [vm\\_cityhall latlon\\_point\\_1-1-06](#)
- [ParkingMeterRatesTimeLimit\\_point\\_2-1-04](#)
- [webcams\\_point\\_3-21-04](#)
- [VM44PARCEL COORD\\_point\\_1-1-06](#)
- [vm4\\_cwpstreets\\_line\\_6-1-04](#)
- [ParkingMeterRatesTimeLimit\\_line\\_1-1-04](#)
- [VMSHORE LINE83\\_line\\_1-1-06](#)
- [VM\\_CITY LINE83\\_line\\_1-1-06](#)
- [VM Major Streets NAD83\\_line\\_5-1-04](#)
- [vmsea\\_line\\_1-1-06](#)
- [Zoning\\_polygon\\_11-4-04](#)
- [Can\\_wat\\_polygon\\_1-1-06](#)

Refresh Close

Done Internet

# What gets preserved?

- The data themselves must be preserved
- The ability to render the data as interactive maps must be preserved
- Presentation elements such as colours and fonts do not necessarily have to be preserved







Address Search [Options](#) | [Reset](#) | [Help](#)

Number:  Street:   
or select:

Toolbox [Right-Click Menu](#) | [Help](#)



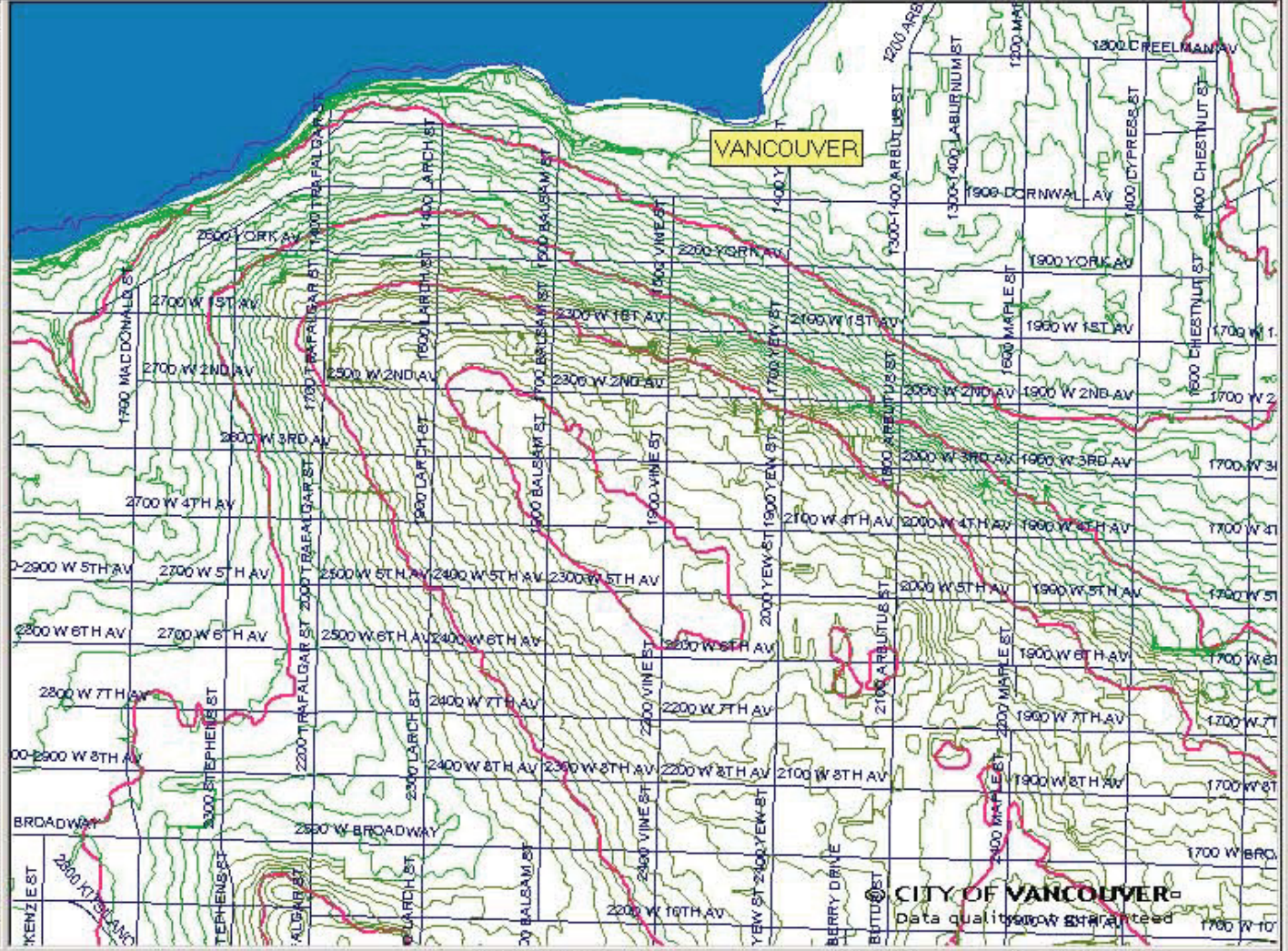
Help

[About the Data](#)

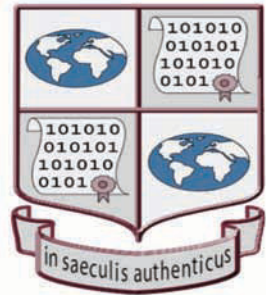
Applications

Select Application:

- Sea Level to 25m
- 26m - 51m
- 51m - 75m
- 76m - 99m
- 100m or higher
  
- 1-metre Contours (2002-NE)
  - 10m to Sea Level
  - Sea Level to 25m
  - 26m - 51m
  - 51m - 75m
  - 76m - 99m
  - 100m or higher
  
- 1-metre Contours (2002-SW)
  - 10m to Sea Level
  - Sea Level to 25m
  - 26m - 51m
  - 51m - 75m
  - 76m - 99m
  - 100m or higher
  
- 1-metre Contours (2002-SE)
  - 10m to Sea Level
  - Sea Level to 25m
  - 26m - 51m
  - 51m - 75m
  - 76m - 99m
  - 100m or higher
  
- 2-Metre Contour Lines
- 10-Metre Contour Lines
  
- Street Lighting



BC Regions : VANCOUVER      0 feature(s) selected      1 : 9,439      6,145 x 4,572 (ft)



<http://www.interpares.org>



<http://www.sdsc.edu/>



<http://www.vancouver.ca/vanmap/>

