



Project Name: : <b>LeBreton Flats Environmental and Geotechnical 3D Mapping</b> <b>Ottawa, Ontario, Canada</b>					
Budget: \$50,000		Estimated Completion: 2000/6/29 Actual Completion Date 2000/6/29		Client: National Capital Commission 40 Elgin Street Ottawa, ON	
Prime	?	Consortium		Sub-Consultant	

**Project Highlights:**

GeoSolutions Consulting compiled a comprehensive database of bore hole and test pit data of the LeBreton Flats from reports spanning a period of 10 years. The database brings together data on the lithological structure and geochemistry lab results into a single database that can be used to conduct modelling and manage the large volume of site data.

A database interface was programmed to aid managing and generate reports of the data.

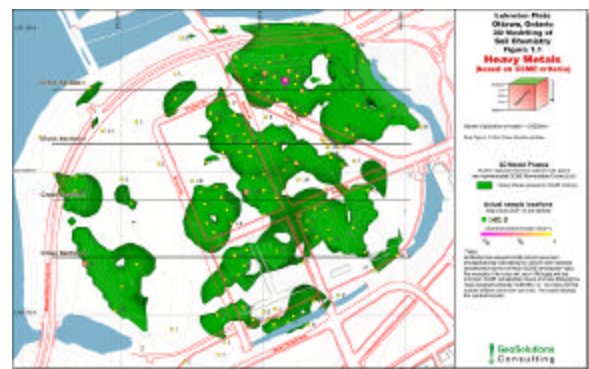
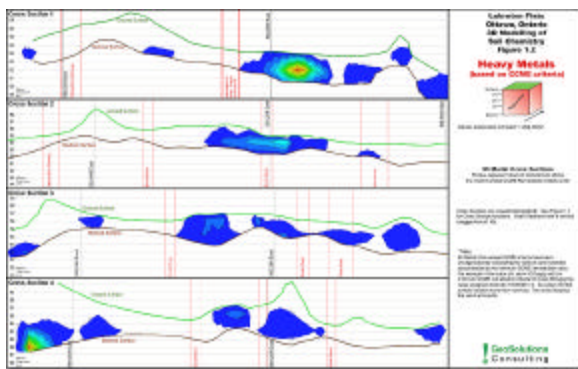
Using 3D modelling algorithms, plume diagrams and cross section profiles were generated to assist in visualizing the areal extent and concentration of contaminants. These models were used to provide volume calculations for the amounts of material that contain contaminant concentrations that exceed guideline levels.

**Scope of Services (Objectives and Deliverables):**

The Client required that the data from the following studies be compiled into a format that could be visually interpreted and used for further investigations.

1. LeBreton Flats, ABC Lines, Ottawa Ontario, (May 2001) Jacques Whitford Environmental Ltd.
2. Investigation at Site 42 (Dibblee Asphalt Plant) - LeBreton Flats (October, 1998) Aqua Terre Solutions
3. Environmental Site Assessment, LeBreton Flats (January, 1998) Aqua Terre Solutions Inc.
4. Supplemental Environmental Site Assessment, LeBreton Flats (March, 1998) Aqua Terre Solutions Inc.
5. Revised Volumes, Preliminary Costs and Criteria Review, (March 2000) Aqua Terre Solutions Inc.
6. Soil and Groundwater Sampling Investigation; LeBreton/Bayview Planning Study - Group I and II Sites, (March 1993) Golder Associates Inc.
7. Supplementary Site Investigation and Evaluations of Remediation Options for Sunlight Oil and Baker Bros. Sites, LeBreton Flats, (April 1996) Golder Associates Inc.
8. Soil and Goundwater Sampling Investigation; LeBreton/Bayview Planning Study, (March 1992) Jacques Whitford Environment Ltd.

The client required that these data be interpolated and used to create 3D models. The results of the models were presented in a series of cross-section and plume diagrams as illustrated below.



<b>Consultation:</b> Technical review was conducted by Jacques Whitford Environmental Ltd.	
<b>Challenges and Solutions:</b>	
<b>Challenge:</b>	Bore hole and test pit data compiled over past years and contained within a large number of studies was for the most part, only available in hardcopy format, and thus difficult to access and utilize in site interpretations. In addition, there were variations in the lithological classifications used in different studies.
<b>Solution 1:</b>	<i>A relational database model designed for hydrogeology applications was expanded to accommodate geotechnical and geochemistry data associated with bore hole logs and test pit data. Bore hole logs were interpreted and the data loaded into the new open database format.</i>
<b>Solution 2:</b>	<i>3D Models were generated to enable the calculation of material volumes and visualization of the data extents and concentrations. This was supported with cross-section profiles.</i>
<b>Challenge:</b>	Previous interpretations of the extent and depth of contaminants had not used 3D mapping algorithms to model the concentrations and interpolate bounds.
<b>Solution:</b>	<i>GeoSolutions Consulting applied analytical methods to interpolate the concentrations of heavy metals, TPH and PAH, and represented the models using plume diagrams and cross-section mapping.</i>
<b>Challenge:</b>	The client was faced with a short timeline within which to provide results in a format that was easily understood and did not have previous experience with the analysis and visualization capabilities.
<b>Solution:</b>	<i>GeoSolutions Consulting made regular presentations to the client to show the work being completed and discuss approach and technical issues. This process ensured that the project remained within the scope and deliverables met expectations.</i>
<b>Construction and Procurement Methods:</b> Not Applicable	
<b>Key Personnel:</b>	Dave Branson - Project Manager Tim Albert – Sr. GIS Analyst Janet Green – Database Programmer
<b>Sub-consultants:</b>	Waterloo Hydrogeologic Inc.