60-Year Old Construction Yard
REMEDiated AND REDeVELOPED

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OUTLINE

- BACKGROUND
- SITE DESCRIPTION
- SITE REMEDIATION
- SITE RESORATION
- PROPERTY DEVELOPMENT
A Brownfield is

According to the US Environmental Protection Agency, a brownfield is real property; the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Canadian Brownfield 2009 Conference web page. A brownfield is an abandoned, vacant, derelict or underutilized commercial or industrial property where past action has resulted in actual or perceived contamination and where there is an active potential for development.

City of Brantford, Ontario. A “brownfield site” is hereby defined to be a lot (as that term is defined in Bylaw 160-90) either with or without buildings or structures, having a history of either industrial or commercial uses and which, as a result of these uses, has become environmentally contaminated under circumstances where there is no reasonable prospect that the remediation of such contamination will be accomplished solely by the private sector.
5340 – 1st Street SW, Calgary, Alberta
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Site Description

- Construction Company Maintenance Yard
- Located approximately 0.5 km north of Chinook Shopping Centre
- Contained 5 buildings
  - Office Building;
  - Maintenance Shop;
  - Quonset;
  - Warehouse; and
  - Welding Shop.
Site Description cont’d..

- 3 Steel UST (2 diesel and 1 gasoline);
- 2 In-ground concrete tanks (wood preserving);
- 1 AST (diesel);
- New and Used Engine Oil Storage Tanks (~1m³);
- 2 In-ground Hydraulic Hoists and Hoist Bay;
- Used and abandoned equipment; and,
- Storage and parts compound.
Site History

- Construction Company Yard since 1956
- In 1996 an UST located north of Quonset was removed
- In 2002, Initial Soil and Groundwater Assessment was conducted around UST (Environmental Diagnostics Ltd.)
- In 2003, Detailed Soil and Groundwater Quality Assessment (EBA Engineering)
- In 2004, Remedial Activities Commenced
### Impacted Areas

<table>
<thead>
<tr>
<th>#</th>
<th>Area</th>
<th>Source</th>
<th>Media Impacted</th>
<th>CoC*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Warehouse</td>
<td>In-ground tank</td>
<td>soil and groundwater</td>
<td>PHC and Metals</td>
</tr>
<tr>
<td>2</td>
<td>Quonset</td>
<td>former UST</td>
<td>soil and groundwater</td>
<td>PHC</td>
</tr>
<tr>
<td>3</td>
<td>Fuel Storage</td>
<td>3 USTs</td>
<td>soil and groundwater</td>
<td>PHC</td>
</tr>
<tr>
<td>4</td>
<td>Welding Shop</td>
<td>Hoist Bay</td>
<td>soil</td>
<td>PHC</td>
</tr>
<tr>
<td>5</td>
<td>Parking Lot</td>
<td>unknown</td>
<td>soil</td>
<td>PHC and Metals</td>
</tr>
<tr>
<td>6</td>
<td>SE Corner</td>
<td>concrete USTs</td>
<td>soil and groundwater</td>
<td>PHC and Metals</td>
</tr>
<tr>
<td>7</td>
<td>Main Shop – hoist bay</td>
<td>Hydraulic hoist</td>
<td>soil</td>
<td>PHC</td>
</tr>
<tr>
<td>8</td>
<td>South Part</td>
<td>dust suppression</td>
<td>soil</td>
<td>PHC and Metals</td>
</tr>
<tr>
<td>9</td>
<td>Utility Corridor</td>
<td>3 USTs</td>
<td>groundwater</td>
<td>PHC</td>
</tr>
</tbody>
</table>

*CoC - Contaminants of Concern
PHC - Petroleum Hydrocarbons
In 2006, Additional areas with metal impacts were detected around Main Shop and Warehouse and remediated.
Remediation Objectives

- Alberta Environment (AENV) Risk Management Guidelines for Petroleum Storage Tanks (AENV October 2001) for PHC and Lead

Site Remediation

- In 2006, the remediation was completed in all areas except:
  - Underneath one of the supporting pillars in Hoist Bay area; and
  - Underneath the south end of Welding Shop.
- The RAP was developed by EBA Engineering Consultants in 2004 and remedial activities presented at Remtech 2005.
Property Development

- In January 2006, Inland sold the site to Oktagon Properties Ltd.
- Two months later, Oktagon subdivided the site in two parcels (south and north);
- Three months later, South Parcel was sold to Manchester Properties; and
- Four months later, North Parcel was sold to a Consortium of 7 Eye Doctors managed by Courtenay Real Estate Services Inc. (CRESI).
South Property Restoration

- In February 2007, Welding Shop was demolished and associated PHC impacted soils excavated and disposed (managed by ARCADIS Canada)

One of the doors from Welding Shop was salvaged by me and installed on my Garden Shed
Welding Shop Demolishment
South Property Re-development

South Property Re-developed (2008)
North Property Re-developments

In May 2007, CRESI submitted property development application to the City of Calgary

Ecoterra Solutions Inc. prepared:
- Risk Management Plan (RMP); and,
- Tendering package for buildings demolition and site restoration
RMP was developed to address potential health risks that could result from exposure to contaminants of concern (CoC) during the demolition and soil excavation.

Pathways: inhalation and direct contact; CoC were:
- Volatile hydrocarbons (benzene); and
- Asbestos (previous asbestos survey report was not available)

Subsequent Asbestos Survey detected asbestos in:
- Drywall mud,
- Window caulking,
- Linoleum, and
- Pipe insulation (elbows).
Asbestos Abatement

Old linoleum

Window caulking

Office Building after drywall removal
Getting Ready

Quonset

Main Shop
Getting Ready

These trees are protected by the City of Calgary - Parks and have not been disturbed during the site restoration.
Hazardous Waste Disposal

Pipe insulation

Hazardous materials disposal
Liquid Waste Disposal

- 2 in-ground storage tanks
Main Shop Demolishment
Hoist Bay
Soil Remediation
Site Re-contouring
In summary

- Demolition Debris - Approx. 1223 m$^3$
- Asphalt Demolition and Removal - 585 m$^3$
- Concrete Demolition including slabs and foundation walls - 1050 m$^3$
- Excavation and stockpiling of clean soil - 429 m$^3$
- Disposal of impacted soil - 86 MT
- Backfilling site - 546 m$^3$
- Steel Salvage - 450 MT
Thank you!

Any Questions?