

## RESUMÉ



### Education

B.Sc. Geology, 1988 Rensselaer Polytechnic Institute, Troy, New York;

### Professional Affiliations

Australasian Land & Groundwater Association (ALGA) – Member

### Technical Skills

Contaminated Land Assessment  
Remedial Strategy Development  
Remedial System Design, Installation and Operation

### Management Skills

ERM's Contaminated Sites Manager Perth in 1997; National Director 2002  
Responsive Environmental Solutions (RES) WA Manager in 2004, acquired by WSP in 2006  
Project Director / Manager up to \$15M

### Work History

WSP Environmental Perth Ltd.  
Business Unit Manager 2006-2010

Responsive Environmental Solutions, WA – Company Director 2004-2006

ATA Environmental  
Manager, Dunsborough WA 2002-2004

Environmental Resources Management – National Director, Contaminated Sites group 2002  
Perth Operations Manager - 1997 to 2001

Groundwater Technology Australia Pty Project Manager  
Perth, Western Australia 1994-1997  
Brisbane, Queensland 1992-1994

Groundwater Technology Inc.  
Project Manager  
San Diego, California 1990-1992  
Boston, Massachusetts 1988-1990

## WILLIAM LINES

### HAIL Environmental Limited

#### Principal Environmental Geologist, Director:

Over 23 years of experience in contaminated land consulting starting with 4 years in the United States followed by 18 years in Australia and one year in New Zealand. Residing in New Zealand since 2013 and joined HAIL Environmental in 2015. Currently responsible for project management, technical advice, and internal peer review associated with contaminated land assessment and remediation projects.

#### Relevant Experience – New Zealand:

Horticultural Sites in the Bay of Plenty and Auckland regions: Preparation and peer review of Preliminary Site Investigations (PSIs) and Detailed Site Investigations (DSIs) on residential and commercial land developments with registered HAIL use.

Diesel Spill Site: Soil investigation of residual contamination from release of 19,000 litres of diesel fuel into a drinking water catchment on Mt. Ruapehu ski field. Preparation of remedial feasibility study of diesel hydrocarbons in excavated soil using bioremediation treatment cells.

#### Relevant Experience – Australia:

Oil Field Operations: Project Director for Chevron Australia for investigations of several large scale releases of crude oil on oil / gas / produced water separation facilities related to oil production operations on Barrow Island in Western Australia (WA). Surface and subsurface releases with residual LNAPL contamination plumes ranging up to 10M litres on various sites within a karstic limestone environment.

Barrow Island is an “A class” nature reserve with the highest level of conservation protection for Crown Land. It includes extremely strict quarantine management procedures such that the public is not allowed access to any part of the reserve. Currently Australia's leading producer of oil, Barrow Island's oil field exploration and production operations began in 1964 and continue today with >400 active oil wells. Barrow Island also provides the base for the >\$75B AUD Gorgon Gas development which is Australia's largest resource project with 40 trillion cubic feet (tcf) of liquefied natural gas (LNG).

Project Director for over 10 years for dozens of investigations on former and current oil field lease and other operational areas. Chevron's Barrow Island annual contaminated sites expenditure ranged from \$10M to \$30M. In 2009, Bill received Chevron's “Outstanding Contractor” on behalf of WSP Environmental for providing consulting and contractor services for over 7 years with an Incident and Injury Free (IIF) record.

Project Director for hazard ranking database of >100 historical oil exploration sites on the mainland of WA and a separate hazard ranking for >400 oil wells on Barrow Island. Completed investigation projects of offshore oil production facilities on Thevenard Island for West Australian Petroleum and Varanus Island for Apache Energy Australia.

## Relevant Experience – Site Investigation and Remediation:

### Cement and Asbestos Concrete Products Manufacturing:

Project Director on behalf of Burswood Casino for the remediation of the former Swan Portland Cement and James Hardie sites on the Burswood Peninsula adjacent to the Perth CBD. The Swan Portland Cement site began operations in 1927 and James Hardie manufactured fibre cement building products from the 1920s until 1981. Both sites were constructed on the site of the former Perth Municipal Rubbish Dump which was a domestic and industrial land fill until 1971.

The remediation included cap and containment of more than 750,000 m<sup>3</sup> of cement kiln dust (CKD). The site also contained more than 68,000 m<sup>3</sup> of broken and loose asbestos cement products in zone 1, more than 150,000 m<sup>3</sup> of asbestos contamination in CKD up to 15 m below ground in zone 2, and 180,000 m<sup>3</sup> of CKD with detectable asbestos in zone 3. The site also contained residual chromium in CKD from dumping of used cement kiln bricks containing chromate.

The redevelopment was part of a \$1B medium rise residential and commercial precinct managed by Mirvac Australia in a joint venture with the Burswood Casino. The overall remediation contract exceeded \$14M and the consulting contract was the largest single contract won by ERM in Australia as of 2000.

### Bitumen Manufacturing:

Project Director for remediation of 2 of Perth's largest bitumen manufacturing sites:

Pioneer Road Services was a partnership between Shell Oil and Pioneer who operated a bitumen plant within the Subiaco Redevelopment Area. Hydrocarbons had impacted the groundwater at a depth of >25 m in a shallow unconfined aquifer which supplies numerous public and private water supply bores. Remediation involved demolition of buildings, removal of >5,000 m<sup>3</sup> of heavily impacted soil and treatment on site with a bio pile.

CSR Emoleum operated a bitumen and concrete plant in a residential area in Carlisle which had hydrocarbons in soil and groundwater. The project involved dewatering and soil excavation to remove impacted soil and treatment of soil on site using bio remediation. In 1999 CSR Readymix (WA) nominated the project for the Civil Contractors Federation (CCF) Case Earth Awards and the project won both the West Australian and National Australian awards in category 1 (project value < \$1M).

### Service Stations:

Project Manager for investigation of approximately 200 fuel service stations on behalf of various retail petroleum companies in WA including BP Australia, Shell Australia, Caltex, Ampol and Gull Petroleum. Remediation technologies included oil recovery, ground water pump and treatment, soil vapour extraction, and air sparging. Implemented some the first operational air sparging systems in Western Australia including remediation of a dissolved hydrocarbon plume which required a public water supply bore to be shut down. Project Manager for site demolition and remediation contracts for former metropolitan service stations for Shell Australia between 1995 and 1997.

### Bulk Fuel Storage:

Queensland Project Manager on behalf of Esso Australia for investigation and remediation of regional fuel depots and service stations as part of their divestment of all Australian petroleum assets to Mobil Oil in the early 1990's. In situ remediation technology including total fluids extraction, soil vapour extraction, groundwater pump and treat systems using activated carbon and air stripping.

### Gas Pipelines / Regional Power Stations:

Project Manager for CMS Gas Transmission and West Australian Natural Gas (WANG) – investigation of releases of hydrocarbon and organomercury condensate into shallow soils along the Dongara to Pinjarra gas pipeline. Included remediation of condensate knockout pots located in a compressor station in Caversham and Pinjarra.

Regional Power Stations: Project Manager for Western Power for the investigation of diesel hydrocarbons in soil and groundwater at several regional diesel fired power stations in WA in Derby, Menzies, and Carnarvon.