

Co-operation Canada – Netherlands

Groundwater and soil management

RemTech 2009



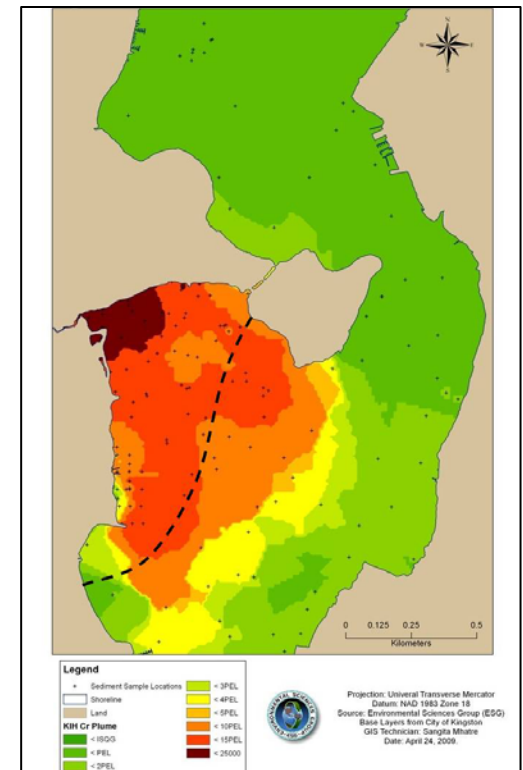
Progress of co-operation 2008 - 2009

- Quebec: Quebec City (Technorem and Groundwater Technology) – presentation Yvo Veenis
- Ontario: Kingston demonstration project
- Ontario: Soil vapour Intrusion
- Alberta: (ground) water resources

Some flash backs Ontario

- Ontario Centre of Excellence Discovery Days 2009 – May 2009
- Workshop in The Netherlands on Soil Vapour Intrusion
- Visit of the City of Kingston to The Netherlands
- Preparation workshop in Ontario on Soil Vapour Intrusion

Kingston project



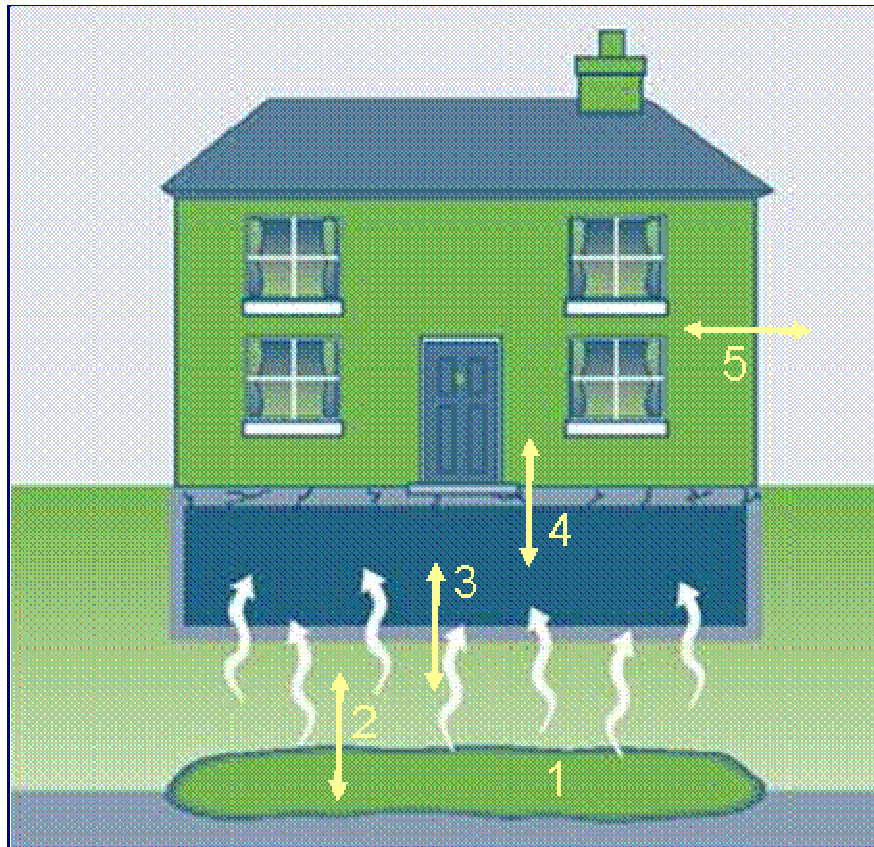
Kingston potential partners

- **Property owners:** Rideau Renewal Inc. City of Kingston, Parks Canada, Transport Canada
- **Research Groups:** ON: Royal Military College; Queen's University, NL: Wageningen University; Deltares
- **Government:** City of Kingston, Cataraqui Region Conservation Authority, Ontario Min. of Environment, Netherlands Ministry of Housing, Spatial Planning and Environment, Canadian federal government expert support departments, OCE
- **Consultants:** Golder (Canada), Tauw (The Netherlands)
- **Remediation Contractors from the Netherlands:** Boskalis Dolman, Damen Dredging, A&G environment, Groundwater Technology
- **Canada:** Fracrite, Ground effects

Kingston project elements

- Soil remediation
- Soilwashing
- Soilbank management system
- Engineered wetlands
- Environmental dredging (large scale management of contaminated dredged sediments Boskalis-Dolman)

Soil Vapour Intrusion

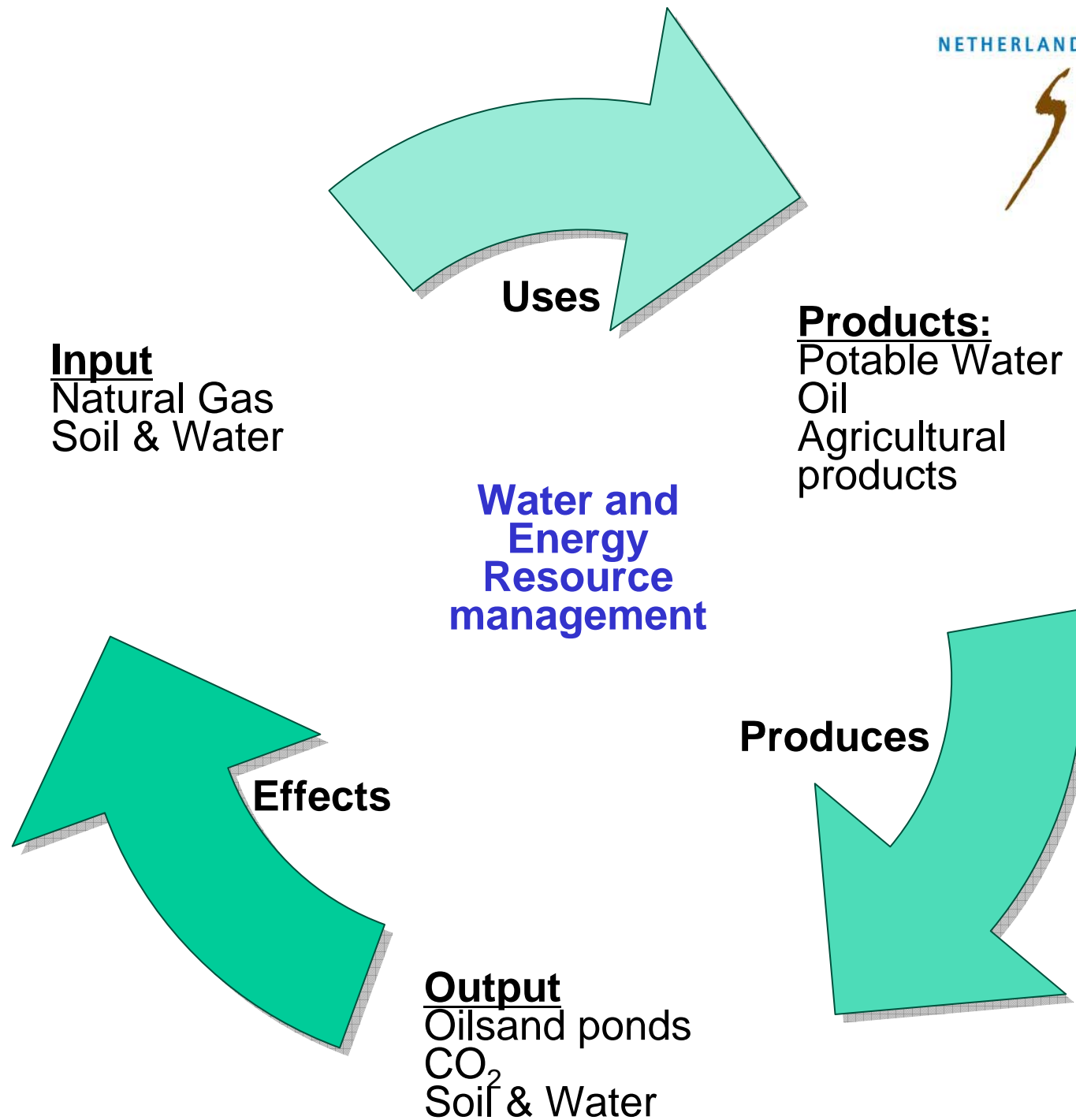


Proposed Topics Research Program on Vapour Intrusion

- Processes in the saturated and vadose zone
- Monitoring Methods
- Field Studies
- Guidance, tools and consistency

Some flash backs Alberta

- May 2008 visit of Canadian repr. (gov. – R&D – consultants) (BC, AB, ON, QU) to The Netherlands
- Visit November 2008 Hon. Premier Ed Stelmach to The Netherlands
- Visit January 2009 Hon. Min. Iris Evans to Netherlands
- Visit June 2009 Hon. Min. Doug Horner to Netherlands



Where did we get so far

- Themes:
 - Safe and stable supply of water resources
 - Strategic alliance between Alberta and The Netherlands
- Identify areas of possible co-operation
 - Environment, agriculture and energy
 - (Ground) water management and governance
- Criteria
 - Safe and stable supply of water resources
 - Mutual benefit
 - Innovation and education
 - Have results on the short term as well as on the long term.

(Ground-) Water management

- Development of a Methodology for Interactive Planning for Water management
- Development of a large-scale high-resolution decision-making tool for groundwater-related issues
 - groundwater model database
 - an impulse-response database
 - user-friendly interactive modeling tool
- Aspects of contamination and the risk they impose
 - mobile contaminants migrating through groundwater
 - risk assessment

Water governance

- "shared governance" among government, industry and the public
 - roles, responsibilities, and management of the watershed
 - transparency of the governance structure by developing a set of indicators
 - build a common understanding of the respective roles of the actor groups in the Water for Life Strategy;
 - monitor and assess the progress of the Water for Life strategy;
 - Facilitate integrated knowledge for and application to policy and regulations.

Workshop 13 October

Participants:

- AWRI, Min. of Env., Agriculture, Adv. Education and Technology, Worly Parson, Alberta Geological Survey

Goals:

- Set up a working group and steering group to define a white paper on the groundwater management opportunities in Alberta where the aquifer and soil need to be protected from future influences (climate change, uses) that have an impact the quantity and quality of groundwater reserves

Co-operation in the fields:

- Improve knowledge of groundwater reserves, quality and management;
- Development of groundwater management policies and tools;
- Education, building capacity and improving stewardship.

Workshop 13 October

Some example topics that can be considered:

- Water budget on regional scale
- Future city water management: present water shortage and future drought period and how is a city anticipating to that. Groundwater storage facilities; water markets; industrial water quality, contamination and impact on GW.
- Regional modeling of groundwater and management system
- Projects, training and courses between universities, government, industry.

Thank you for your attention !

Hans van Duijne

T.: +31 30 256 4676

M.: +31 6 5354 8482

Email: Hans.vanduijne@deltares.nl