

## Sector Round Table Summaries

### Oil and Gas Meeting

On November 3, 2009, the National Round Table on the Environment and the Economy (NRTEE), in collaboration with the Canadian Association of Petroleum Producers (CAPP), hosted a roundtable meeting of stakeholders/experts from the oil and gas industry to discuss issues pertaining to the existing and future use of Canada's water resources by this sector.

The multi-stakeholder group represented a range of interests including industry, environmental non-government organizations and provincial and federal government departments. The focus of the meeting was to identify the current and emerging freshwater use and availability issues within the oil and gas sector, and characterize the state of water use information/data within the sector.



The latter discussion also highlighted future information gaps that must be eliminated to deal effectively with sustainable water management believed necessary for sustainable water management. The final portion of the meeting focused on recommendations to the NRTEE with respect to critical policy issues that the NRTEE might incorporate into its Water Program in 2010.

### Water Use in the Oil and Gas Sector

CAPP provided an overview of water use by the sector, key issues (perceived and real) and identified current efforts underway by the sector regarding improving its performance. The CAPP presentation noted a number key water uses by the sector:

- Conventional oil (enhanced oil recovery which involves injection of water to force out oil; drilling and completions)
- Oil sands, both mining (separation of bitumen from sand; steam for upgrading) and in situ production (require steam to heat bitumen underground, allowing it to flow to the surface); and
- Natural gas; shallow gas (including coal bed methane) deep gas, tight gas, shale gas).

This summary is a brief description of the key points of discussion. It is intended to highlight the main ideas and discussion points and is not meant to be representative of the meeting in its entirety.

The oil and gas sector views water management as a key aspect of its operations specifically with respect to production. However it does not view water availability as a major constraint or risk to the future sustainability of the sector as a whole (perhaps with the exception of the industry in the southern Prairies where fresh water use has been almost eliminated). Nonetheless, there are some sub-sectors that will likely require significant efforts in water management in the future. In the western sedimentary basin, water availability is not viewed as an issue in conventional production, which is declining, or, at present, in the oil sands. However, future growth of the oil sands (particularly SAGD operations – steam assisted gravity drainage – which will account for over 80% of future development) and potential production in new natural gas plays (such as shale gas in northeastern British Columbia) have potential to increase this sector's water use. It was noted that, while there are significant water requirements for SAGD operations, the source of water for these operations is predominantly saline groundwater rather than freshwater, and that no freshwater is withdrawn from the Athabasca River for SAGD production. It was also noted that SAGD operations use a very high percentage of recycled water, and that up to 90% of water used during oil sands mining operations can be recycled depending on the facility and type of extraction. Oil sands companies are continuing to improve their water efficiency. At the same time, Alberta Environment and the Energy Resources Conservation Board are developing more stringent water use policies so fresh water use is further reduced. This builds on an already extensive regulatory framework governing oil and gas sector water use.

### Key Water Issues

Rob Powell of World Wildlife Fund (WWF) provided a presentation that highlighted concerns regarding water sustainability and resource development, specifically in relation to changing river hydrology in the context of potential climate change. WWF advocated that adequate planning to accommodate conservation of natural resources (water in this case) should precede resource development to ensure that the environment is sustained. In-stream flow needs, particularly of the Athabasca River, have been identified by many groups as an issue for the oil sands developments, and there are existing efforts underway to try to understand and address this issue.

Bev Yee of Alberta Environment supplied a presentation that focused on the challenge of cumulative effects management and discussed key issues associated with this challenge including:

- regional differences;
- increasing water demand from population and economic growth;
- increasing pressure on health of aquatic environment and water quality;
- uncertainty about future water supply (eg. climate change);
- need for enhanced water resource information; and
- public and stakeholder expectations.

In addition to the issues identified by WWF and Alberta Environment, a number of issues were raised throughout the meeting with respect to the sector's water use; some of the key issues are briefly summarized below:

- The oil and gas sector acknowledges that it has room to improve water management practices, but believes that conflicting policies and unclear policy direction have made it difficult to improve water use. The sector sees the need for future water management to be based on sound, science-based decision-making and to be outcome-oriented rather than prescriptive. Clear policy direction is required by governments and policies should be sufficiently flexible to allow for innovative management and to account for uncertainty (particularly associated with climate change). Further, the sector strongly believes that water should be managed in the context of other resources, so that tradeoffs between resource uses can be openly acknowledged and incorporated in decision-making. As well, responsible water use results in significant value add to Alberta and Canada's economy, furthering the need to balance decision-making.
- Technology has and will continue to play an important role in helping the sector to improve water use, but improved collaboration between industry and governments is needed to overcome challenges. In addition to the regulatory challenges identified above, the sector struggles with broader technology deployment. Individual companies assume significant risk trying to launch new water management systems, and government risk-averse funding structures do not provide the support needed for field scale technology development. Collaborative initiatives currently exist to advance innovation and technology in the oil and gas industry (PTAC – Petroleum Technology Alliance Canada); however meeting participants generally agreed that the companies could increasingly work together to further advance water-use technology, and that establishing a centre of excellence could be an example of such collaboration.
- Shale gas and thermal in situ oil sands operations have potential to be of greatest concern as far as gross water use is concerned. As noted earlier, SAGD operations in the Athabasca region do not use freshwater and rely almost entirely upon saline groundwater, so technical and policy barriers to saline water use need to be identified and managed. For shale gas developments, the water requirements and sources are not yet fully understood; industry participants noted that the use in shale gas developments is temporal and therefore can be planned for.
- Mature oilfields pose a significant resource opportunity that typically is further-developed using enhanced oil recovery (EOR) techniques. Water flooding is the traditional methodology to produce additional oil resource. Further work on alternative technologies may be warranted. As well, it is worth evaluating cost-benefit methodologies to confirm the acceptability of continued freshwater use for EOR recovery in certain circumstances.
- Participants at the meeting identified public perception of water use by the industry, particularly oil sands, as a key issue, whether deserved or not, and that the sector needs to address its image through effective communication and trust-based dialogue. Some participants believe that this could be achieved, in part, by finding different ways to

engage stakeholders. Transparency and neutrality should be key components of future dialogue on water and other issues. Trusted third-party communication is also essential to inform public opinion. Governments and agencies can play a key role, both as a communicator and as a sponsor of these entities.

## **Water Use Information and Data**

Alberta Environment policies and regulations provide extensive oversight of all industrial water uses in the province. The sector is highly regulated by numerous acts, regulations, directives, codes of practice, guidelines and policies. Regulations in Alberta stipulate that all water on a site must be accounted for, obliging oil and gas companies to report on rainfall, water withdrawal and water levels to the provincial government. Material water uses are calculated from pump and meter data. The quality and availability of data are different for different types of operations. Water use data are thought to be more comprehensive and accurate for oil sands operations. Water use data associated with conventional oil operations, particularly for exploration and drilling activities, is less comprehensive because the water use is relatively small compared to non-conventional operations.

While the water reporting requirements exist, the availability of the data and information is presently difficult to obtain because of the lack of an appropriate and accessible database. The Alberta Government recognizes the information gap and weakness of the information database and is currently working towards improvements through its Integrated Monitoring, Evaluation and Reporting Framework Project.

## **Direction for Further Inquiry by the NRTEE**

Participants indicated a need for more information on multi-stakeholder governance processes and on the relationship between groundwater and surface-water use.

Participants indicated that investigation of multi-stakeholder governance processes and the relationship between surface water and groundwater use and quality issues, including through groundwater mapping, are not currently covered by other organizations, and therefore may be an area for investigation by the NRTEE.

In line with the sector's risk-based approach to water management, one participant suggested that the NRTEE focus on issues of high risk.

Participants identified a number of ideas the NRTEE could pursue to shed light on sustainable water management issues for natural resource sectors in Canada. They may include:

- Educating the public and sharing solutions and lessons learned;
- Conducting a fair comparison of environmental (water use) performance across sectors;
- Reporting on benchmarks to communicate progress to the public and support water management decisions;
- Assessing the societal value of water to assist in future decisions about broad scale tradeoffs;
- Examining the tradeoffs between the use of water and other resources;
- Examining approaches that allow “best-placed” management/governance by regulators; and
- Reviewing mechanisms used to manage water on a basin scale.