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Prairie & Northern Region  
Environmental Protection Operations (EPO) Directorate  
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Yellowknife, NT X1A 2P7

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Our File No.: 4706 001 036  
Your File No.: S12X-006

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Via Email at [Angela.love@slwb.com](mailto:Angela.love@slwb.com)

Attention: Ms. Love

**RE: S12X-006 – Husky Oil Operations Limited – Slater River Surface Water and Groundwater Monitoring Plan**

Environment Canada (EC) has reviewed the Husky Oil Operations Limited (Husky) Slater River Program Surface Water and Groundwater Monitoring Plan submitted to the Sahtu Land and Water Board, as required under Land Use Permit S12X-006 (Slater River Groundwater Baseline Drilling Program).

It is our understanding that the purpose of Husky's groundwater investigation program is to establish baseline groundwater conditions prior to further exploration activities and to assess the extent and quality of bedrock aquifers in the program area. The drilling program includes up to 15 bedrock groundwater monitoring wells on five well sites, and 20 overburden groundwater monitoring wells on 20 well sites.

Water Licence Requirements

Condition B.3(d) of the Land Use Permit S12X-006 states, "The Permittee shall submit an annual report to the Sahtu Land and Water Board by September 30<sup>th</sup>. This report shall include: ... details and results of the Surface and Groundwater Monitoring Plan, including but not limited to: monitoring locations (GPS coordinates), depths, frequency of monitoring events, chemical parameters tested, and data analysis;"

Condition D.22 states, "The Permittee shall submit a Groundwater and Surface Water Monitoring Plan by January 11, 2013 for approval from the Sahtu Land and Water Board. Once approved, the Permittee shall:

- (a) Revise the Plan as needed and submit to the Sahtu Land and water Board for approval, and;
- (b) Abide by the approved plan for the duration of this Permit."

While EC understands that the Land Use Permit S12X-006 is to allow activities associated with the Slater River Groundwater Baseline Drilling Program, EC notes that surface water monitoring is also referenced in the type of water monitoring plan required under the water licence. No surface water monitoring information has been included in the Surface Water and Groundwater Monitoring Plan currently under review.

**EC recommends** the Plan be updated to include surface water monitoring.

### Groundwater Well Installation and Monitoring

Husky notes that depth to groundwater at each well will typically be measured from the top of the well casing using a water level tape and that automatic level recorders will be installed, where possible, to facilitate well and aquifer testing, and long term aquifer monitoring.

**EC recommends** that, if not already planned for, elevation surveys of wells be completed with each new well installation and be repeated periodically (i.e. annually) to ensure that wells do not become compromised (e.g. through frost-jacking action) and to reduce the potential for erroneous groundwater level and groundwater quality data.

Husky notes that two water quality sampling events will be completed at the overburden monitoring wells prior to Project operations start-up (one following well construction and development during 2013 drilling program and the second during open water season to confirm possible seasonal variation). Husky also notes that only one water quality sampling event will occur at the bedrock monitoring wells following well completion development and testing. Husky has provided justification for only a single baseline water quality sampling event.

EC recognizes that groundwater sampling from the bedrock monitoring wells can sometimes be more difficult and time consuming than sampling from shallower overburden monitoring wells. However, EC recommends a second sampling event at most (if not all) the bedrock monitoring wells be completed in order to provide reliability in the baseline data (i.e. reproducibility in the data) and demonstrate the extent of seasonal variability in groundwater quality and water levels.

### Sampling Strategy and Reporting

Husky states, "Prior to commencing the operations phases of the Project, the monitoring infrastructure will be modified to accommodate water quality sampling and aquifer pressure effects sampling at a frequency commensurate with monitoring objectives. Based on the results of the initial baseline sampling program, future water quality sampling events may include a subset of the baseline laboratory analytical suite presented in Table 2."

EC appreciates Husky's approach to establishing a groundwater investigation program and understands, based on the paragraph above, that the program will be further developed in time after the initial collection of baseline data.

EC encourages Husky to consult with ConocoPhillips and others conducting surface water and groundwater monitoring in the area and work towards development of consistent water monitoring plans and programs. **EC recommends** consistent, coordinated sampling, analysis and reporting where possible.

**EC recommends** that the Groundwater and Surface Water Monitoring Plan and annual reporting also include a summary of long-term water monitoring goals and a characterization of the groundwater and surface water resource. This would include, but not be limited to, detailed well information, a groundwater and surface water quality data and interpretation, groundwater surface elevation and flow direction, changes over time (including due to seasonal effects) and any other interpreted results and conclusions and statistical data analysis. Maps and diagrams should be used where appropriate to communicate information (including the information requested above, well completion diagrams, borehole stratigraphy, cross-sections – stratigraphic and hydrogeological and flow maps).

#### General

EC is aware that Husky has been very proactive with respect to the development of a project specific surface water and groundwater monitoring plan as well as working cooperatively to contribute to current and future regional monitoring initiatives.

**EC recommends** that, in order for Parties to have a full understanding of Husky's activities, they provide a brief summary of current and proposed involvement with other companies, regulators and agencies with respect to surface water and groundwater monitoring and management.

Thank you for the opportunity to review Husky's Surface Water and Groundwater Monitoring Plan. Please do not hesitate to contact me at (867) 669-4744 or [loretta.ransom@ec.gc.ca](mailto:loretta.ransom@ec.gc.ca) with any questions concerning the above points.

Sincerely,



Loretta Ransom  
Senior Environmental Assessment Coordinator, EPO

cc: Ken Hansen (Project Manager, Husky Oil Operations Limited)  
Carey Ogilvie (Head, Environmental Assessment North, EPO)  
Martin Guilbeault (Senior Pollution Prevention Scientist, EC)