



Field Operations
AANDC, Nunavut District Office
Box 100
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27 April 2013

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RE: Inspection of Water Licence 2BE-HAK0915, April 23-24 2013

The role of Aboriginal Affairs and Northern Development ("AANDC") in issues related to the use of water or deposit of waste in Nunavut is one of compliance monitoring and enforcement. Water Resource Officers and Resource Management Officers are appointed as Inspectors pursuant to s.85(1) of the *Nunavut Water and Nunavut Surface Rights Tribunals Act (2002)* ("the Act"). AANDC's preferred option is to work with clients to address instances of non-compliance with their authorizations or the Act and risks to the environment.

Please find attached the report on the Water License Inspection conducted at the Hackett River Project on April 23 and 24, 2013. Included at the end of the report is a summary of observations made during the inspection with respect to issues of non-compliance or non-conformity with the issued Water License or the Act, and the actions required of Xstrata as a result.

Should you require more information or clarification on any aspect of the enclosed report please contact me at the coordinates listed below. I look forward to continuing to work with you and your staff. If you have any questions please do not hesitate to contact our office here in Iqaluit.

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Cc: Phyllis Beaulieu – Manager licensing – Nunavut Water Board
Scott Burgess – Site Manager – Hackett River Project



License #: 2BE-HAK0915
Inspector: Eva Paul
Inspection Date: April 23 & 24 2013
CIDMS #: *sent remotely*

Client		Xstrata Canada Corp., Xstrata Zinc Canada Division	
Mailing Address		8801 TransCanada Highway, Suite 400 Saint-Laurent, QC, H4S 1Z6	
Inspection site location		Hackett River Project	
Contact name	Robert Prairie	Title	Director, Ecological Effects Assessment
Last inspection date	July 6, 2012	July 9, 2011	August 1, 2010
Region		Kitikmeot	
Related Crown Authorizations		AANDC Lease: 76F/16-1-7 AANDC LUP: N2010C0015	



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The Hackett River Project is based out of the Hackett Camp, Latitude 65°54'32.5"N and Longitude 108°22'13"W in the Kitikmeot Region of Nunavut. Xstrata holds a type 'B' water licence for camp operations and exploration activities.

On April 23 and 24 2013, a compliance inspection was carried out at the Hackett River Project. No winter inspections by AANDC are on file for this project, and so this visit provided invaluable insight into the unique challenges that this project faces with respect to location and logistics. The Hackett River Project is bursting at the seams: pushing the limits of the type 'B' licence and the capacity of its current camp location. It is likely the only project of its size in Nunavut that does not have the benefit of an all-weather airstrip and bulk fuel storage. The current strategy involves roughly 300 plane-loads of fuel, totalling over one million litres, delivered in a tight window between camp start-up in February and spring freshet. The Hackett location is restrictive, with few flat spots in the hilly terrain that are well suited for drummed fuel storage. The six-drill program is near the water consumption limits of the current licence, and any further increases to the program could require a licence amendment.

Throughout the inspection, I was accompanied by Scott Burgess, Rob Davidson, Pascal Lessard, or Robert Boucher. All were extremely helpful, and we were able to have productive, open discussions regarding the licence and the challenges that currently exist.

Several practices on-site have been modified since the last inspection to address issues that were identified. Meters are in use on the drills, water recirculation and active management of drill cuttings are occurring, the core cutting practices have been adapted, and updated plans were submitted. However, there are also some significant oversights with respect to the monitoring requirements of the licence. Outstanding issues remaining from 2012 include:

- The reclamation estimate remains outstanding,
- The water sampling results from the 2012 on-ice drilling program were not submitted, and
- No pH testing is being conducted on the cuttings effluent.

As my visit was cut short due to weather, I did not have time to complete an Inspection Report Form for signature prior to departure. This report will be the only report issued for this inspection, and Mr. Burgess has had the opportunity to review and comment on this document prior to its finalization.



Part A: Scope, Definitions and Enforcement

At the time of the inspection and of this writing, the Licensee holds a current water licence (“the licence”) issued by the Nunavut Water Board (“the NWB”).

Part B: General Conditions

The 2012 Annual Report has been submitted to the NWB. The updated plans were not submitted with the report as requested; however, Mr. Burgess was updating them to include the latest 2013 information at the time of the inspection. The reclamation estimate as required by Item 2(c) remains outstanding. This shall be provided to the Board and to the Inspector by June 30, 2013.

Part C: Conditions Applying to Water Use

As in many sites in winter, the water pump runs continuously to keep the lines from freezing. Water is drawn off this flow as needed to fill the tanks for camp use, and the rest is returned to the lake. Xstrata currently reports only that portion of the water that is drawn into the tanks. Conversely, at drill sites, the total volume of water pumped, based on pump capacity, is what has been reported. As was discussed during the inspection, recent direction from the NWB indicated that all water drawn from the source was to be considered ‘used’. This may affect how Xstrata is required to report water figures in the future, and may require that Xstrata amend the licence to reflect the higher figure for camp.

Detailed water use records for 2012 were provided to the Inspector as requested. Current records for 2013 will be submitted electronically to the Inspector by May 3, 2013. At start-up this year, Xstrata installed meters on the drills; not only measuring total water pumped from the source (as the pump has to run continuously to keep the line from freezing), but they also installed a second meter to measure how much water is actually required to operate the drills using the new recirculation system. Xstrata presented to me the preliminary statistics showing that a small fraction of the water was being used ‘down the hole’ and the rest was returned to the lake or to the land unchanged.

Part D: Conditions Applying to Waste Disposal

Waste segregation practices are in place at Hackett. Recyclables and non-burnables are separated out at source, including at the drills. There were issues with the incinerator during my visit, however, and there was some waste accumulating near the incinerator. The log was not up to date; the incinerator had been used that morning, but it was not recorded in the log.

Backhaul of waste is facilitated by the many flights coming into Hackett at this time of year. Records of backhauled waste were available.

The geology staff and drillers (Major) at Hackett have put considerable effort into improving drill waste management practices since the last inspection. A water recirculation system on the drills means that less waste (contaminated water) is produced as a result of drilling. There is also a significant reduction in total salt used. Further, drill cuttings are being collected in mega-bags, which capture the cuttings and allow the water to drain from the cuttings. The cuttings are being deposited in centralized sumps, which will mean fewer sites requiring monitoring for pH. Refinement is required in capturing the saline water coming from the mega-bags, and hard containment is required for those drills operating on-ice. Drill cuttings and water used in the drill process should not come in contact with the ice. Brine spills to



the ice should be treated and reported as per the Spill Contingency Plan. Selection of sump sites should be done in the summer to better determine their suitability as a sump. Another innovative strategy adopted at the project to ensure progressive reclamation of drill sites is to disallow the drill team to begin a new hole until the last is properly cleaned. It appears to be effective.

Xstrata has yet to implement a program to test the pH of effluent from cuttings sumps as required by Item 10 of this Part. Xstrata has recently engaged a consultant who will be able to develop a protocol for this. Preliminary testing shall be done this summer, and a protocol that meets the requirements of this Item is to be developed and presented to the Inspector within 6 months for approval.

A copy of the revised Waste Management Plan which was to be submitted with the Annual Report is to be submitted to the Inspector immediately.

Part E: Conditions for Camps, Access Infrastructures and Operations

Part E Item 1: The Licensee shall not erect camps or store material on the surface of frozen streams or lakes including immediate banks except what is for immediate use. Camps shall be located such as to minimize impacts on surface drainage.

Hackett personnel simply are not able to keep up with the volume of fuel and supplies that are being delivered in the short window that the ice strip is available. There was a considerable volume of fuel (over 500 barrels) sitting on the ice at the time of my arrival, and several deliveries occurred during my stay. No secondary containment was in use. Drill salt was also stored on the ice, as well as construction and drilling supplies. This is a direct contravention of Item 1 of this Part as well as other items of the Licence. While I can appreciate that it is the only flat surface available to Hackett personnel due to the camp location, and that inspection of the fuel on the ice is occurring twice daily, this practice cannot continue. Fuel and materials delivery cannot exceed what can be removed daily from the lake to proper storage. Several possibilities were discussed in relation to this issue: the proposed alternate camp location, the possibility of winter road use next year, and the use of more efficient methods to remove the materials from the lake. Prior to camp opening in 2014, Xstrata will detail to the Inspector how compliance with this item of the licence will be achieved. In the interim, Mr. Burgess committed to moving the existing materials off the lake more quickly by running a night shift.

Parts F: Conditions Applying to Drilling Operations

The question arose regarding Item 6 of this Part (sampling for water quality conditions prior to and following on-ice drilling) where the lake is frozen to bottom. In this situation, sampling is not possible. It should be noted in the monitoring results which are to be reported in the annual report.

Part G: Conditions Applying to Modifications

No modifications were noted under this Part.



Part H: Conditions Applying to Spill Contingency Planning

A copy of the revised Spill Contingency Plan which was to be submitted with the 2012 Annual Report is to be submitted to the Inspector immediately. An inspection log of the fuel berms was in use at the time of the inspection, and showed that daily inspections are occurring.

Fuel management continues to be an issue for Xstrata at the Hackett River Project. As noted earlier, there is too much fuel, it is arriving too quickly, and there are limited places to put it. Existing fuel berms remain buried in snow, and staff were working to dig them out and make them available for the new stock. While it is relatively easy to flatten out a frozen space to lay a new berm, I noted last July that this results in management issues later on as ground thaws and the stacks move. It requires near-constant monitoring and management. Longer term solutions must be sought if Xstrata intends to continue with this size of a program. Bulk fuel storage, expansion of the Lease boundaries or modifications of the Lease conditions were discussed as potential solution; if the current site is to be used in 2014.

Many berms still contained snow; although some had been shoveled out by the time of the inspection. Snow must be removed in order for secondary containment to be effective. Contaminated snow must be handled appropriately. Drill salts, particularly open bags at the drill sites, are to be kept in secondary containment.

The tidy-tanks used at the drills should be on trays large enough to house the full tank as well as the hoses and nozzles. While fuel transfers are generally occurring over drip trays or containment, it was noted that the upright barrels (the barrels in use) at the heli-pads were not in containment and the pumps were left in. Spills were noted on the heli-pad. No other spills were noted on-site.

Part I: Conditions Applying to Abandonment and Restoration or Temporary Closing

As previously discussed, Part I item 2 requires that an updated project reclamation estimate be provided annually in the Annual Report.

Progressive reclamation of drill sites was occurring promptly at the time of the inspection due to the new protocols implemented by the Licensee.

Sumps will be inspected during the summer inspection.

Part J: Conditions Applying to the Monitoring Program

The Licensee is now metering all water usage. GPS coordinates for all water sources and all waste deposits were provided in the 2012 Annual Report. Results for samples taken under Item 4 of this part for drilling in 2012 are to be submitted immediately as an appendix to the Annual Report and copied to the Inspector. If no samples were taken, an explanation should be submitted.

This licence has been in place since 2009, and Xstrata has operated the project since 2011. Monitoring protocols should be well-established by now. Failure to implement the required monitoring is a violation of the Licence and the Act.



General Comments:

Xstrata has worked diligently and innovatively to resolve many issues that were identified. Fuel management remains a significant issue at Hackett River. All monitoring requirements under the licence must be carried out in 2013. I would suggest that a full-time qualified person is required at this stage of the project to conduct the monitoring, ensure proper implementation of plans, and to bring this project into compliance with the regulatory requirements. Xstrata must find ways to work within the constraints of the existing water licence, or apply for amendments to the licence.

Non-Compliance:

Issues where there is/was a known or suspected violation of a requirement of the Water Licence or Act:

Part B item 2(c): Reclamation estimate not included in the annual report.

Part B item 2(f): Water sampling results not included in the annual report.

Part D item 10: Effluent from drill cuttings not sampled to verify that pH meets discharge criteria.

Part E item 1: Licensee is storing materials (including large quantities of fuel) on the lake.

Part F item 6: Failure to conduct water sampling in association with on-ice drilling.

Part H item 2: Failure to store fuel <31 m. from the high water mark of a water body.

Part I item 2: Failure to provide updated Reclamation Estimate.

Part J item 4: Failure to conduct water sampling in association with on-ice drilling.

Summary of Action Required:

1. Effective immediately, the use of the frozen lake as a lay-down area is to be discontinued. All materials delivered should be removed from the ice within 24 hours of delivery. This requires changes to either the rate of removal of materials from the ice, or the quantity of material delivered daily.
2. Effective immediately, water sampling will be carried out according to Parts F and J of the licence.
3. Berms around camp are to be shovelled out in order to be effective.
4. Barrels at the heli-pad are to be kept in secondary containment, and fuel transfers are to occur over a spill tray.
5. Incinerator logs are to be maintained.
6. All drill waste is to be kept from contacting the ice during on-ice drilling. Hard-sided containment for mega-bags is preferable.
7. Tidy tanks should be placed in containment large enough to accommodate the associated hoses, filters and pumps.
8. A report with photographs to demonstrate that the above actions have been taken is to be submitted to the Inspector by May 31, 2013.
9. Reclamation estimate to be submitted to the Board and the Inspector by June 30, 2013.
10. Protocol for pH testing of effluent from cuttings is to be submitted to the Inspector by October 31, 2013.
11. The revised Waste Management Plan and Spill Contingency Plan are to be submitted to the Inspector immediately.
12. Prior to camp opening in 2014, Xstrata will detail to the Inspector how compliance with Part E Item 1 will be achieved.



Failure to undertake the actions required as described in this inspection report, and to the satisfaction of the Inspector, may result in enforcement action(s) being undertaken pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*.

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Affaires autochtones et
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