Kiggavik Project

Final Spill Report

July 17, 2015

July 2015

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1 INTRODUCTION

On June 17, 2015 a spill was detected on the AREVA Resources Canada Inc. Kiggavik Lease, which is located 80 km west of the community of Baker Lake, Nunavut. The detected spill involved the transport of potentially contaminated drill return water into a nearby water body. The unauthorized discharge of the drill return water was located during a daily rig inspection by the SHEQ Supervisor and the Project Geologist in the 85 West area.

The incident was reported to the NT-NU Spill Report Line at approximately 8:30 pm on June 17, 2015. This 30 day report is required in accordance with Nunavut Water Board (NWB) License No. 2BE-KIG1318 and AREVA's Spill Contingency Plan. It is in addition to the NT-NU Spill Report as well as the 7 Day Spill Report distributed on June 22. Reporting is completed in accordance with the NWB License Part H item five and the Aboriginal Affairs and Northern Development Canada (AANDC) Land Use Permit N2014C001 item 32. This report was distributed to AANDC, NWB, the Kivalliq Inuit Association (KIA), and Environment Canada (EC) within 30 days of the incident. The following sections describe the incident and the corrective and preventative measures implemented.

2 INCIDENT SUMMARY

During a routine drill inspection conducted by the SHEQ Supervisor and Project Geologist, a spill was detected in a waterbody near Drill 1 at approximately 4:30 pm on June 17, 2015. Potentially contaminated drill return water and cuttings from underneath the drill were not properly contained and were washed downhill away from the drill. The excess clean water line further facilitated the downhill migration of the drill cuttings into a water body 120 m to the west. The spill site is located at 64°25'18" N, 97°48'17" W (14W 557576 7144542). An aerial suvey was conducted on June 17 to better gauge the impacted area from the spill depicted in Figure 1 below.

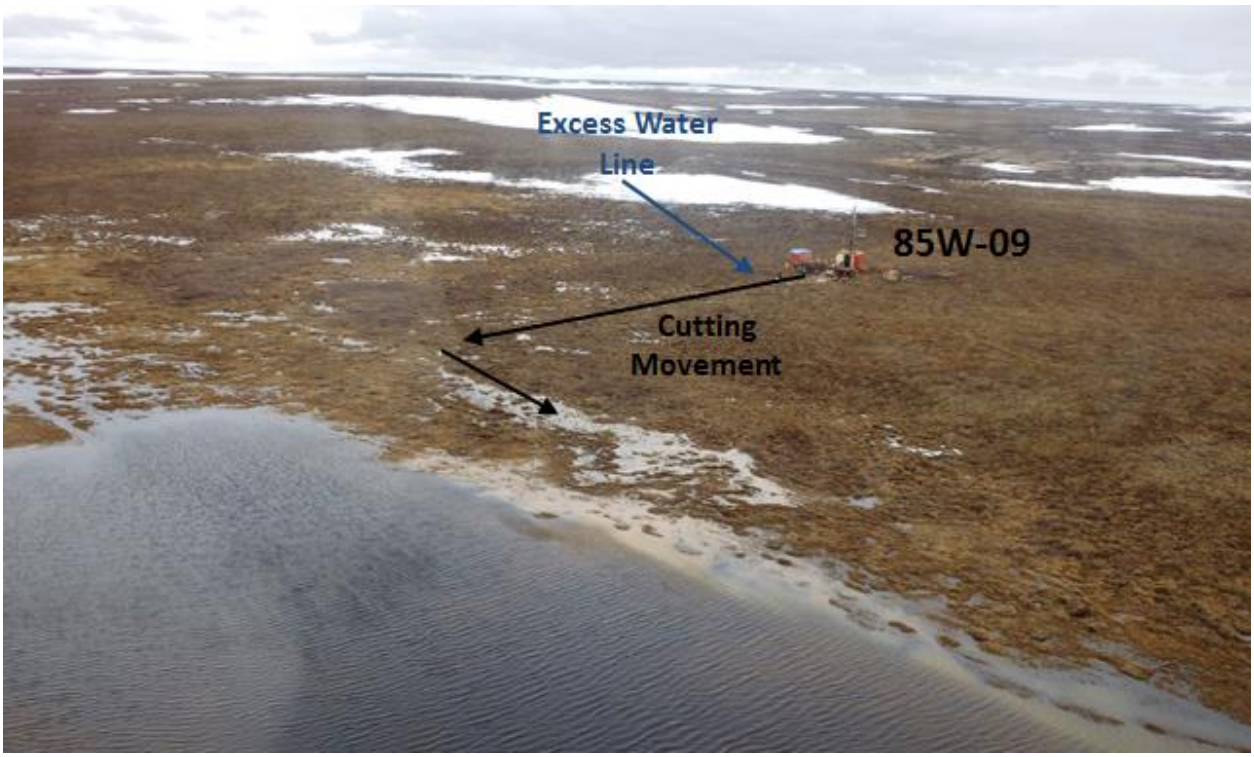


Figure 1. Discharge of Potentially Contaminated Return Water (June 17, 2015)

A ground survey was also conducted indicating that the spill was a combination of runoff water, drill return water, and cuttings from installation of the casing. The combination of drill return water and drill cuttings had the appearance of muddy water (Figure 2 and 3). The impacted area of the spill was estimated to be 200 m by 10 m (2000 m^2).

Figure 2. Mixture of Drill Return Water and Drill Cuttings Near the Drill Area June 17, 2015

Figure 3. Runoff Water Mixed with Drill Return Water June 17, 2015

3 CORRECTIVE AND PREVENTATIVE MEASURES

3.1 IMMEDIATE CORRECTIVE MEASURES

Following the identification of the spill, various corrective and preventative measure were implemented at the spill site. The excess clean water discharge line was immediatey extended away from the site in order to reduce the amount of water flowing through the affected area. Socks filled with wood chips were placed at a bottleneck of the spill to reduce the transport of sediments towards the small water body. A sump pump was placed below the drill to intercept all new water and drill cuttings. Another sump pump was used to clean up affected areas around the drill and was then placed in the containment area to remove excess water and drill cuttings. Both sump pumps were set up to discharge water into the contained discharge area 200 m East of the drill and 320 m away from the small lake.

Figure 4. Installation of Filter Socks and Sump Pump on June 17, 2015

3.2 RADIATION SURVEY

An Automess 6150 AD radiation detection device was used to scan the spill area immediately following the spill with an additional survey the following day. The surveys indicated no radioactive contamination in the area as a result of the spill.

3.3 AERIAL SURVEY

Aerial surveys of the area were conducted on June 18, 19, and 20 as illustrated in Figures 5, 6, and 7.

Figure 5. Aerial Survey of Spill Area on June 18, 2015

Figure 6. Aerial Survey of Spill Area on June 19, 2015

Figure 7. Aerial Survey of Sill Area on June 20, 2015

4 SRC WATER RESULTS

A surface water sample of the affected area was obtained on June 17, 2015. It was stored in the Kiggavik camp office until shipment could be arranged South to SRC.

4.1 SAMPLE COLLECTION METHOD

A surface water grab sample was taken from the shallow water body approximately 10 cm below the surface of the water directly in the area visually affected by the turbid water from the drill. Water samples were placed into appropriate bottles supplied by Saskatchewan Research Council Analytical Laboratories (SRC) and preservatives were added according to SRC Laboratory Protocols. The sample collected in the field was then sent to the Kiggavik Field Office and prepared for shipment to SRC in Saskatoon.

4.2 LABORATORY ANALYSIS

Water chemistry samples were analyzed by SRC for the following parameters:

- conventional parameters (i.e., pH, specific conductivity, sum of ions, total alkalinity, total hardness, total suspended solids [TSS], and turbidity);
- total and dissolved metals and metalloids by ICP-mass spectroscopy (ICP-MS) scan including aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc;
- inorganic chemistry including bicarbonate, carbonate, chloride, hydroxide, P. alkalinity, nitrate; and
- mercury and lithium.

4.3 SUMMARY OF RESULTS

Table 1 is a summary of the SRC results from the water sample taken on June 17, 2015 at 64°25'18" N, 97°48'17" W. The results were received from SRC on July 9, 2015.

Table 1. 85W-09 Spill Water Results

Parameter	Unit	85W-09 Spill Sample	Parameter	Unit	85W-09 Spill Sample
Bicarbonate	mg/L	15	Barium	mg/L	0.18
Carbonate	mg/L	<1	Beryllium	mg/L	0.0003
Chloride	mg/L	2.0	Boron	mg/L	0.01
Hydroxide	mg/L	<1	Cadmium	mg/L	0.00008
P. alkalinity	mg/L	<1	Chromium	mg/L	0.0032
pH	pH units	6.90	Cobalt	mg/L	0.0011
Specific conductivity	uS/cm	38	Copper	mg/L	0.0071
Sum of ions	mg/L	38	Iron	mg/L	2.24
Total alkalinity	mg/L	12	Lead	mg/L	0.0021
Total hardness	mg/L	27	Lithium	ug/L	2.9
Nitrate	mg/L	0.08	Manganese	mg/L	0.032
Mercury	ug/L	<0.02	Molybdenum	mg/L	0.0002
Fluoride	mg/L	0.06	Nickel	mg/L	0.0046
Total dissolved solids	mg/L	253	Selenium	mg/L	<0.0001
Total suspended solids	mg/L	7	Silver	mg/L	<0.00005
Calcium	mg/L	5.4	Strontium	mg/L	0.026
Magnesium	mg/L	3.4	Thallium	mg/L	<0.0002
Potassium	mg/L	9.3	Tin	mg/L	<0.0001
Sodium	mg/L	1.5	Titanium	mg/L	0.0050
Sulfate	mg/L	1.7	Uranium	ug/L	0.8
Aluminum	mg/L	2.12	Vanadium	mg/L	0.0035
Antimony	mg/L	<0.0002	Zinc	mg/L	0.035
Arsenic	ug/L	0.8			

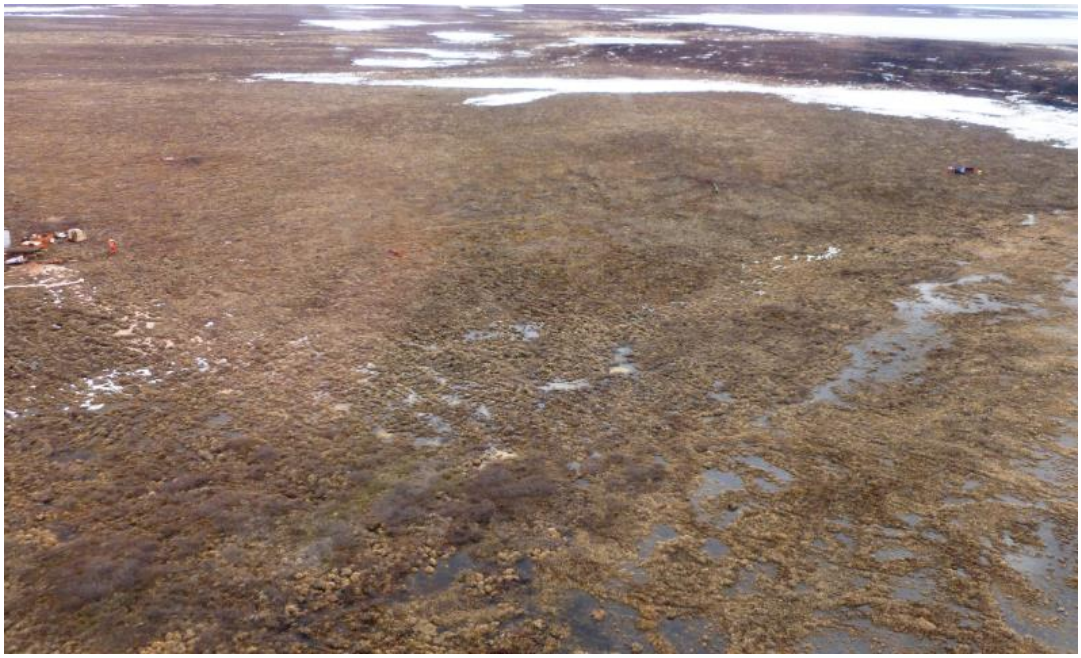
5 CONCLUSION

On June 17, 2015 a spill involving potentially contaminated drill return water occured on the Kiggavik lease in the 85W area. Return water and cuttings entered a water body after being washed down the hill due to the placement of the excess clean water line and presence of runoff water in the area. This facilitated the cuttings to migrate down the hill and enter the small water body. The excess water line was relocated away from the spill site to reduce water flow through the area. A sock berm was constructed to mitigate further impact on the small water body. A sump pump was placed at the drill hole to collect return water and cuttings. A second sump pump was used to clean up affected areas and placed in front of the sock berm to control excess water buildup. Both sumps pumped water to the dischare area which is contained and located away from any water bodies present in the area. It was concluded through the water sample and radiometric survey that the spill consisted of non-mineralized drill cuttings, and was mostly just turbid water flowing from the drill site location into the small water body.

Future drill discharge sites will utilize a sump pump near the drill hole during all operations where potentially contaminated drill return water is a risk. Additionally, four new Aqua Berms were acquired. These berms are portable barrier systems that can be left at the drills and filled with water when better containment is needed in a drilling area. The berms are flexible and are expected to better conform to the uneven terrain where the drilling is occuring.

6 PHOTOGRAPHS

Photograph 1. Discharge of Potentially Contaminated Drill Return Water (June 17, 2015)



Photograph 2. Aerial Survey on June 18, 2015

Photograph 3. Drill Return Water Discharge to Small Water Body (June 17, 2015)

Photograph 4. Containing the Spill on June 17, 2015