RECOMMENDATION/CONDITION	COMPLIANCE ACTION
AREVA to review and revise Uranium Exploration Plan as required by changes in operation and/or technology. Revisions to Plan submitted as addendum with Annual Report.	Board approved AREVA's Uranium Exploration Plan submitted October 17, 2007. As part of AREVA's commitment to continual improvement. Operational Plans are reviewed at least once per year and revised as necessary.
The Licencee shall not conduct any land based drilling within thirty (30) metres of the ordinary high water mark of any water body with the exception of the End Grid Lake area as identified in the application received dated October 9, 2008"	Any drilling within 30 m of the high water mark will be under an approved licence amendment with applicable protection and mitigation measures in place to the satisfaction of the NWB and DFO.
Drill waste (water, chips, muds, salts) from land-based drilling are disposed of in properly constructed sump or natural depression	Utilizing natural depressions, supplemented by temporary sandbag berms and visually monitoring flow. These inspections take place daily by AREVA staff.
Drill mud solids or cuttings with a Uranium concentration > 0.05 percent are collected and disposed down hole and sealed.	This material is disposed of down hole or collected in bags and stored in appropriate storage facility for future handling
Immediately seal and cap artesian flow and report to NWB in annual report	As approved by the NWB on March 14, 2012 AREVA is permitted to drill while under low flow artesian conditions within all areas encompassed by the Kiggavik Lease provided the appropriate measures are implemented (as outlined in Amendment approval). Refer to Section 7.2 for information regarding all artesian flows encountered during the 2012 field season

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Record the depth of permafrost – include in annual report	The installation of thermistors did not occur through the 2012 season as this is an activity specific to mine development. The permafrost depths are therefore estimated based upon previous thermistor locations.
No on-ice drilling	On ice drilling will only occur under applicable approved licence amendments with appropriate protection and mitigation measures in place to the satisfaction all regulatory bodies.
When conducting drilling within 30 m of the ordinary high water mark of End Grid Lake, activities are to be on stable ground such as frozen tundra or bedrock	Drill platforms are located on stable ground and set up on timbers to prevent damage to permafrost.
AREVA shall establish water quality conditions of adjacent waters or waters immediately downstream prior to and upon completion of any drilling program within 30 m of the high water mark	Drill holes END-12-06, END-12-07, and END-12-08 were completed within 30 m of the ordinary high water mark of the streams located in the End Grid Lake area in accordance with the existing NWB approval. Results are shown as per Section 8.
MODIFICATIONS	
Modification conditions	Management is aware of these conditions and will comply to them if required
SPILL CONTINGENCY PLANNING	
Within 30 days of Licence issuance, submit addendum to Spill Contingency Plan to address	The Spill Contingency Plan was updated and submitted according to requirement

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
issues identified during previous technical reviews and letter dated November 29, 2007 not incorporated into October 2007 version.	and addressed all issues identified in 2007. The Plan will continue to be reviewed at least annually and revised if necessary.
AREVA to review and revise Spill Contingency Plan as required by changes in operation and/or technology. Revisions to Plan submitted as addendum with Annual Report.	Reviewed at least annually and reviews are submitted with the annual report.
Ensure that any chemicals, petroleum products or wastes associated with the project do not enter water. All sumps and fuel caches located at least 30m from high water mark and inspected on a regular basis. An exception to this condition is during drilling activities within 30 m of the ordinary high water mark at End Grid.	In compliance through the implementation of the Spill Contingency Plan; proper training and awareness. All drilling sites are inspected daily by AREVA staff. Double walled tanks are used at the drills and secondary containment is used under all pumps and hoses.
While drilling is occurring within the 30 m high water mark at End Grid, AREVA may allow a limited supply of fuel within 30 m of the ordinary high water mark to support the drilling operations, provided that secondary containment is made available for the storage of fuel and all external pumps and motorized equipment used.	
Equipment maintenance and servicing conducted only in designated areas	Addressed through training and awareness.
Spill reporting procedure	Addressed in Spill Contingency Plan; training, awareness and site planning.
ABANDONMENT AND RESTORATION OR TEMPORARY CLOSING	

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Submit Abandonment and Restoration Plan	Submitted, will be reviewed at least annually and revised if necessary
Within 30 days of Licence issuance, submit addendum to Abandonment and Restoration Plan to address issues identified during previous technical reviews with letter dated November 12, 2007 not incorporated into October 2007 version.	Complete The Kiggavik Contact List is kept as a separate document to allow frequent updates. All operational plans are reviewed and updated at least annually.
AREVA to review and revise Abandonment and Restoration Plan as required by changes in operation and/or technology. Revisions to Plan submitted as addendum with Annual Report.	Noted. This and other plans are reviewed annually and revisions are submitted with the annual report.
Complete restoration work prior to the expiry of this Licence	Addressed in the Abandonment and Restoration Plan.
Progressive reclamation is to be carried out	Reclamation to ensure chemical stability occurs in a progressive manner; best management practices for reclamation to ensure physical stability of surface disturbance is currently being investigated.
All sumps are backfilled to satisfaction of an Inspector	Will occur if required and will be inspected during regular visits to site.
Remove all site infrastructure and material before expiry of licence	Addressed in the Abandonment and Restoration Plan.
Shall re-grade roads and airstrip	Currently not required.
Remove all culverts	Currently not required.
Disturbed surfaces prepared for vegetation growth by ripping, grading or scaring surface to	Addressed in the Abandonment and

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
conform to natural topography	Restoration Plan.
Ensure areas contaminated by hydrocarbons are reclaimed to meet objectives outlined in the GN's Environmental Guidance for Site Remediation, January 2002. GN consultation and approval necessary to use reclaimed soil for the purpose of backfill or general site grading.	This is addressed in the Abandonment and Restoration Plan and the Spill Contingency Plan.
Drill holes and disturbed areas to be restored immediately upon completion of drilling. Reclamation must include removal of any drill casing material and capping of holes with a permanent seal.	Casing is cut off at ground level at all drill holes and holes are sealed by cementing and/or grouting. This is addressed in the Abandonment and Restoration Plan. Efforts were made in 2012 to cut off any casing which had been left during earlier years of drilling. These efforts will continue in the subsequent years to ensure all casing is removed.
Drill core must be stored >30m above high water mark	Core is transported from the drill location to the Kiggavik camp on a daily basis and stored >30 m above the high water mark of the nearest water body.
Long term storage of core will not exceed radiation measurements of > 1.0 μSv at 1 m from surface and not to exceed 2.5 μSv	Implemented Radiation Protection Plan; regular inspections and monitoring are conducted by AREVA site personnel.
Seal by grouting entire mineralization zone and greater than 10 m both above and below each mineralization zone, any drill hole that encounters mineralization with a uranium content greater than 1.0% over a length of >1 meter, and with a	Completed as required in all holes to date.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION	
meter-percent concentration >5.0		
Seal by cementing the upper 30 m of bedrock or entire depth of hole, whichever is less	Completed as required in all holes to date.	
A detailed report outlining test results and proposed long term core handling and storage/removal mitigation will be submitted to the AANDC Water Resources Inspector if radiation levels for stored core exceed approved levels	Condition is noted, AREVA is committed to its compliance if required	
All disturbed areas contoured and stabilized upon completion of work.	Addressed in the Abandonment and Restoration Plan	
MONITORING PROGRAM		
Measure and record daily water quantities	Conducted and recorded daily by site staff. Please refer to Section 7.1 for further details.	
Provide GPS coordinates of all water sources	Completed; refer to Section 7.1 for GPS coordinates.	
Provide GPS coordinates of all waste locations	Incinerator	64º 26’ 26.97” N 97º 39’ 30.47” W
	Grey Water Discharge Point (south of Kitchen)	64º 26’ 26.75” N 97º 39’ 31.68” W
Provide follow-up monitoring and analytical results of the potable water supply previously utilized under Licence 2BE-KIG0708 including contamination sources and possible mitigation. Plans to address matter included in Annual	Lab analysis was determined to be subject to error, therefore, AREVA re-sampled the camp water supply on June 27, 2009. Analysis conducted at the SRC Laboratory	

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
Report.	showed no traces of grease and oil
All sampling, preservation and analysis to be conducted in accordance with the *Standard Methods for the Examination of Water and Wastewater*	Noted
All analysis performed in an accredited lab (ISO/IEC Standard 17025)	Saskatchewan Research Council (SRC) is accredited by the Canadian Association for Environmental Analytical Laboratories (CAEAL) for environmental testing procedures. Accreditation ensures that procedures, facilities, and methods conform to ISO 17025, the internationally recognized standard. AREVA commits to only using labs that are adequately accredited.
Monitor drill sumps and core storage areas to assess and ensure mitigation required under Abandonment and Restoration Plan have been completed.	Ongoing, refer to Section1.4.4.2.
All data, monitoring results and information required by this "Monitoring" section to be included in the annual report.	In compliance
AREVA shall establish baseline water quality conditions prior to drilling adjacent to End Grid Lake. Monitoring shall include but not be limited to the parameters listed in Part J, Item 10	Drill holes END-12-06, END-12-07, and END-12-08 were completed within 30 m of the ordinary high water mark of the End Grid Streams in accordance with the exiting NWB approval. Refer to Section 8 for further information.

RECOMMENDATION/CONDITION	COMPLIANCE ACTION
AREVA shall determine GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all drill hole locations within the 30 m ordinary high water mark in the END Grid area and provide these locations on a map of suitable scale for review as part of the annual report.	Refer to Section 8 for the map and GPS coordinates of the drill holes located within the 30 m high water mark of the End Grid area.

7 WATER CONSUMPTION AND MANAGEMENT

Water consumption and management during the 2012 field season was compliant with the conditions of the existing Nunavut Water Board Licence No. 2BE-KIG0812. As outlined in the conditions of the licence, the domestic camp water is limited to 10 m^3/day, and the drill water is limited to 290 m^3/day for a total maximum consumption of 300 m^3/day. Water encountered during artesian flows was managed in accordance with the amended licence, and are further described in Section 7.2.

7.1 WATER USE AT CAMP AND DRILLS

Domestic camp water was drawn from the local Unnamed Lake for hygienic use, and local water sources were used to support drilling activities. The locations and use of these water sources are listed below in Table 7.1-1 below.

Table 7.1-1 Water Source Coordinates

Location Name	Use	Coordinates	
		Lat/Long	UTM
Camp	Emergency water source (i.e. Firefighting)	64º 26' 31.78" N 97º 39' 30.83" W	14W 7146969N 564570E
Unnamed Lake	Hygienic water source	64º 26' 36.93" N 97º 39' 49.51" W	14W 7147123N 564317E
End Grid Lake	Drill water	64º 20' 36.73" N 97º 52' 5.66" W	14W 7135783N 554674E
Bong	Drill water	64º 25' 15.5" N 97º 42' 56.4" W	14W 7144551N 561869E
Granite	Drill water	64º 26' 06.2" N 97º 45' 57.0" W	14W 7146072N 559423E
Granite	Drill water	64º 25' 44.2" N 97º 45' 17.3" W	14W 7145402N 559967E
Sleek Lake	Drill water	64º 21' 48.6" N 97º 48' 43.1" W	14W 7138057N 557350E
Sleek Lake	Drill water	64º 21' 49.2" N 97º 50' 03.2" W	14W 7138056N 556276E

All domestic camp water was pumped from the Unnamed Lake into holding tanks with marked volumes. These tanks were filled almost daily during slow periods and twice a day during busy periods. A water meter was installed at the beginning of the season, which measured the accumulative amount of water used. Each time the water tanks were filled, the camp's daily water usage was calculated by subtracting the initial water meter reading from the final water meter reading. The daily domestic water use limit of $10m^3$ was not exceeded at any time during the 2012 field season, and the maximum amount used was 5.78 m^3 on July 21.

The drilling contractor, Boart Longyear, uses water pumps at each drill capable of pumping a maximum of 15 GPM (0.05678 m^3/min), however the pumps did not operate at this rate consistently throughout the 2012 season. Even if all three pumps ran for 24 hours at the maximum rate, the volume of water pumped to the drills would be 245.29 m^3 per day, which falls below the limit of 290 m^3 per day.

The daily water usage from the 2012 field season is summarized in Table 7.1-2 below.

Table 7.1-2 Water Use 2012 Season

Month	Date	Total camp (m^3)	Drill 1 (m^3)	Drill 2 (m^3)	Drill 3 (m^3)	Total
June	8	5.63	0	0	0	5.63
June	9	0.00	0	0	0	0.00
June	10	3.65	0	0	0	3.65
June	11	2.23	0	0	0	2.23
June	12	3.11	0	0	0	3.11
June	13	2.49	0	0	0	2.49
June	14	3.15	0	44.29	0	47.44
June	15	3.71	0	81.76	0	85.47
June	16	2.47	0	81.76	54.51	138.74
June	17	3.51	0	81.76	81.76	167.03
June	18	1.53	0	81.76	81.76	165.05
June	19	3.93	0	81.76	81.76	167.45
June	20	3.77	30.66	81.76	18.74	134.93
June	21	3.47	81.76	81.76	74.95	241.94
June	22	3.51	81.76	78.36	81.76	245.39
June	23	4.49	68.14	81.76	81.76	236.15
June	24	2.10	81.76	63.03	81.76	228.65
June	25	3.13	81.76	81.76	81.76	248.41
June	26	3.81	81.76	81.76	81.76	249.09
June	27	3.99	81.76	81.76	81.76	249.27
June	28	2.73	81.76	81.76	68.14	234.39
June	29	3.67	81.76	81.76	81.76	248.95
June	30	3.36	81.76	81.76	81.76	248.64
July	1	4.08	81.76	71.55	81.76	239.15

Month	Date	Total camp (m^3)	Drill 1 (m^3)	Drill 2 (m^3)	Drill 3 (m^3)	Total
July	2	2.56	44.29	30.66	81.76	159.27
July	3	3.61	64.73	81.76	81.76	231.86
July	4	4.14	81.76	81.76	81.76	249.42
July	5	4.17	81.76	81.76	69.84	237.53
July	6	3.56	81.76	81.76	81.76	248.84
July	7	4.04	81.76	71.55	81.76	239.11
July	8	3.97	81.76	81.76	81.76	249.25
July	9	3.93	81.76	81.76	81.76	249.21
July	10	3.28	81.76	81.76	81.76	248.56
July	11	3.98	81.76	81.76	81.76	249.26
July	12	3.82	37.48	81.76	81.76	204.82
July	13	3.60	81.76	57.92	34.07	177.35
July	14	4.74	81.76	44.29	81.76	212.55
July	15	4.10	81.76	81.76	81.76	249.38
July	16	4.16	81.76	81.76	81.76	249.44
July	17	3.23	81.76	81.76	81.76	248.51
July	18	2.25	81.76	81.76	81.76	247.53
July	19	2.19	74.95	81.76	57.92	216.82
July	20	2.06	71.55	81.76	71.55	226.92
July	21	5.78	81.76	81.76	81.76	251.06
July	22	3.65	81.76	81.76	81.76	248.93
July	23	3.02	81.76	81.76	13.63	180.17
July	24	2.61	81.76	81.76	81.76	247.89
July	25	5.08	81.76	81.76	81.76	250.36
July	26	3.09	81.76	81.76	81.76	248.37
July	27	4.80	34.07	81.76	81.76	202.39
July	28	2.99	81.76	81.76	81.76	248.27
July	29	3.07	81.76	81.76	81.76	248.35
July	30	2.69	81.76	81.76	39.18	205.39
July	31	3.47	81.76	13.63	81.76	180.62
August	1	1.77	81.76	74.95	74.95	233.43
August	2	3.75	81.76	81.76	81.76	249.03
August	3	2.41	81.76	81.76	81.76	247.69
August	4	2.76	30.66	78.36	81.76	193.54
August	5	2.38	57.92	81.76	27.26	169.32
August	6	4.67	81.76	81.76	61.33	229.52
August	7	1.58	81.76	81.76	78.36	243.46
August	8	3.30	68.14	74.95	81.76	228.15
August	9	2.75	81.76	47.7	81.76	213.97
August	10	3.00	81.76	40.88	81.76	207.40
August	11	1.99	81.76	74.95	81.76	240.46
August	12	0.80	78.36	81.76	81.76	242.68
August	13	4.76	78.36	81.76	81.76	246.64
August	14	3.72	81.76	81.76	81.76	249.00
August	15	2.71	61.33	81.76	81.76	227.56
August	16	3.32	71.55	81.76	81.76	238.39

Month	Date	Total camp (m^3)	Drill 1 (m^3)	Drill 2 (m^3)	Drill 3 (m^3)	Total
August	17	3.74	81.76	81.76	81.76	249.02
August	18	3.39	81.76	81.76	57.92	224.83
August	19	3.49	74.95	51.11	0	129.55
August	20	2.68	47.7	47.7	0	98.08
August	21	2.68	40.88	81.76	0	125.32
August	22	2.53	64.73	81.76	0	149.02
August	23	1.49	81.76	81.76	0	165.01
August	24	2.19	74.95	81.76	0	158.90
August	25	2.24	81.76	81.76	0	165.76
August	26	2.58	81.76	61.33	0	145.67
August	27	3.39	23.85	0	0	27.24
August	28	2.59	0	0	0	2.59
August	29	1.39	0	0	0	1.39

7.2 ARTESIANS

During the 2012 field season, artesian flows were discovered in six drill holes of the Bong Grid area. A water sample was taken from the drill rods during each artesian flow, and the corresponding water analysis results are shown in Table 7.2-2. As per the amended NWB licence, please find the relevant artesian information in Table 7.2-1. Thermistor installation for determining permafrost depth and the aquifer and packer testing are activities specific to mine development, and were not implemented during the exploration drilling program. Upon completion, each drill hole was permanently sealed and capped to prevent further outflow.

Table 7.2-1 Artesian Location, Date, Flow and Depth

	Coordinates		Date	Flow Rate (L/min)	Depth (m)
	Lat/Long	UTM			
Bong-054	64º 25' 3.497" N 97º 42' 33.530" W	14W 7144186N 562183E	June 29, 2012	13 – 30	321
Bong-055	64º 25' 0.696" N 97º 42' 27.310" W	14W 7144101N 562268E	July 8, 2012	30 – 85	285
Bong-056	64º 25' 3.100" N 97º 42' 21.517" W	14W 7144177N 562344E	July 16, 2012	5 – 15	279
Bong-057	64º 25' 3.100" N 97º 42' 21.517" W	14W 7144177N 562344E	July 24, 2012	30 – 40	330
Bong-059	64º 25' 0.867" N 97º 42' 28.423" W	14W 7144106N 562253E	August 10, 2012	40	300
Bong-060	64º 24' 59.041" N 97º 42' 26.566" W	14W 7144050N 562279E	August 18, 2012	20 – 100*	282

* Flow rates decreased to below 85 L/min within minutes of initial flow rate reading

Table 7.2-2 Artesian Water Results

Analyte	Units	Bong-054	Bong-055	Bong-056	Bong-057	Bong-059	Bong-060	CCME*
Bicarbonate	mg/L	38	98	29	228	48	72	
Carbonate	mg/L	<1	<1	<1	<1	<1	<1	
Chloride	mg/L	1.1	2070	91	34	6.2	11	
Hydroxide	mg/L	<1	<1	<1	<1	<1	<1	
P. alkalinity	mg/L	<1	<1	<1	<1	<1	<1	
pH	pH units	7.09	7.39	6.59	7.86	7.04	6.62	6.5-9
Specific conductivity	uS/cm	52	5830	363	739	88	148	
Sum of Ions	mg/L	54	3140	190	496	77	125	
Total alkalinity	mg/L	31	80	24	1887	39	59	
Total hardness	mg/L	21	2300	141	44	34	35	
Nitrate	mg/L	<0.04	<0.04	0.04	0.18	0.09	<0.04	13
Mercury	ug/L	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	0.026
Fluoride	mg/L	0.08	0.21	0.12	0.14	0.16	0.15	
Total dissolved solids	mg/L	110	4430	435	892	136	139	
Calcium	mg/L	5.8	551	53	14	9	9.6	
Magnesium	mg/L	1.7	224	2.2	2.3	2.8	2.8	
Potassium	mg/L	0.5	10	2.3	202	1	22	
Sodium	mg/L	6.5	189	1.9	2.8	8.6	6.7	
Sulfate	mg/L	0.8	1.2	11	13	1.4	1.3	
Aluminum	mg/L	0.049	0.008	0.061	0.38	0.078	0.025	0.005 (pH <6.5) 0.1 (pH >6.5)
Antimony	mg/L	0.0003	<0.002	0.0002	<0.0002	<0.0002	<0.0002	
Arsenic	ug/L	0.5	<1	0.7	0.7	0.8	0.8	5
Barium	mg/L	0.064	4	0.081	0.085	0.1	0.098	
Beryllium	mg/L	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	
Boron	mg/L	0.09	0.2	0.02	0.01	<0.01	<0.01	29 Short-term 1.5 Long-term
Cadmium	mg/L	0.00002	0.0001	0.00002	0.00003	<0.00001	<0.00001	0.000005
Chromium	mg/L	0.0032	<0.005	0.0006	0.0019	0.0005	<0.0005	
Cobalt	mg/L	0.0001	0.002	<0.0001	0.0001	<0.0001	<0.0001	
Copper	mg/L	0.011	<0.002	0.0048	0.0046	0.0035	0.0024	0.002
Iron	mg/L	2.07	1.3	0.42	0.91	0.51	0.48	0.3
Lead	mg/L	0.046	<0.001	0.006	0.0053	0.0039	0.0004	0.001
Lithium	ug/L	240	76	36	4	2	1.6	
Manganese	mg/L	0.016	0.64	0.0077	0.014	0.011	0.012	

Analyte	Units	Bong-054	Bong-055	Bong-056	Bong-057	Bong-059	Bong-060	CCME*
Molybdenum	mg/L	0.0008	0.002	0.0001	0.0004	0.0005	0.0008	0.073
Nickel	mg/L	0.0022	0.001	0.0012	0.0015	0.0016	0.0014	0.025
Selenium	mg/L	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.001
Silver	mg/L	<0.00005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005	0.0001
Strontium	mg/L	4.95	20.2	0.83	0.067	0.049	0.048	
Thallium	mg/L	<0.0002	<0.002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	mg/L	0.0002	<0.001	<0.0001	0.0001	<0.0001	<0.0001	
Titanium	mg/L	0.0005	<0.002	0.0017	0.019	0.0038	0.0003	
Uranium	ug/L	0.1	<1	0.2	0.1	0.2	0.1	33 Short-term 15 Long-term
Vanadium	mg/L	0.0001	<0.001	0.0002	0.0011	0.0002	0.0001	
Zinc	mg/L	0.053	0.014	0.018	0.023	0.011	0.008	0.03

* Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

8 DRILLING WITHIN 30 M OF THE ORDINARY HIGH WATER MARK AT END GRID SITE

During the 2012 field season, drill holes END-12-06, END-12-07, and END-12-08 were completed within 30 m of the ordinary high water mark of the streams located in the End Grid Lake area in accordance with the existing NWB approval. The coordinates of all drill holes located within 30 meters of the ordinary high water mark in the End Grid area are listed in Table 8-1 and shown in Figure 8-1.

Table 8-1 Drill Holes within 30 meters of the End Grid Area Ordinary High Water Mark

Drill ID	Date Started	Date Completed	Coordinates	
			Lat/Long	UTM
END-12-06	Jul-22	Jul-30	64°20'46.6"N, 97°52'17.2"W	14W 554517E, 7136085N
END-12-07	Aug-01	Aug-09	64°20'47.0"N, 97°52'14.0"W	14W 554554E, 7136097N
END-12-08	Aug-10	Aug-19	64°20'45.7"N, 97°52'15.1"W	14W 554544E, 7136058N

As a condition of the amendment approval to drill within 30 m of the ordinary high water mark, the NWB requires that water samples be taken prior to commencing drilling operations within 30 m of the ordinary high water mark and again once the drilling activities in this area were completed. These samples were taken on July 14 prior to the start of drilling activities and again on August 30 after the completion of the drilling program. The samples were then analyzed by a third party laboratory for the parameters set out by the NWB. The results of the water samples are shown in Table 8-2.

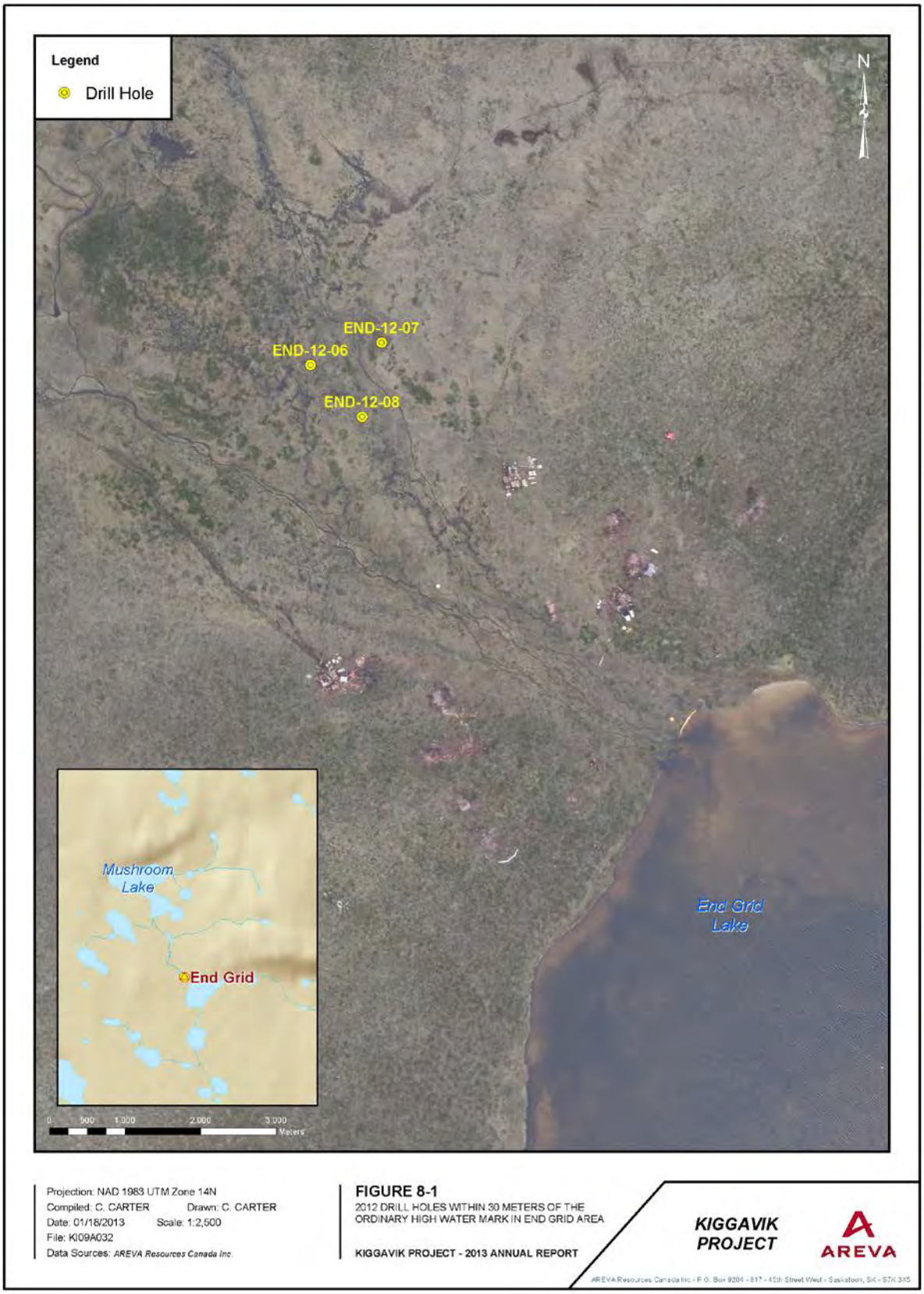


Figure 8-1 2012 Drill Holes within 30 m of the Ordinary High Water Mark in End Grid Area

Table 8-2 End Grid Lake Water Analysis Results

Analyte	Units	END Grid Lake Pre-Drilling	END Grid Lake Post-Drilling	CCME*
pH	pH units	6.47	6.85	6.5-9
Specific conductivity	uS/cm	23	54	
Mercury	ug/L	<0.02	<0.02	0.026
Total dissolved solids	mg/L	17	46	
Aluminum	mg/L	0.023	0.031	0.005 (pH <6.5) 0.1 (pH ≥6.5)
Antimony	mg/L	<0.0002	<0.0002	
Arsenic	ug/L	0.2	0.2	5
Barium	mg/L	0.024	0.048	
Beryllium	mg/L	<0.0001	<0.0001	
Boron	mg/L	<0.01	<0.01	29 Short-term 1.5 Long-term
Cadmium	mg/L	0.00001	<0.00001	0.000005
Chromium	mg/L	<0.0005	<0.0005	
Cobalt	mg/L	0.0001	0.0002	
Copper	mg/L	0.0006	0.0005	0.002
Iron	mg/L	0.44	0.51	0.3
Lead	mg/L	<0.0001	<0.0001	0.001
Lithium	ug/L	0.4	1.3	
Manganese	mg/L	0.015	0.019	
Molybdenum	mg/L	<0.0001	<0.0001	0.073
Nickel	mg/L	0.0005	0.0011	0.025
Selenium	mg/L	<0.0001	<0.0001	0.001
Silver	mg/L	<0.00005	<0.00005	0.0001
Strontium	mg/L	0.018	0.037	
Thallium	mg/L	<0.0002	<0.0002	0.0008
Tin	mg/L	<0.0001	<0.0001	
Titanium	mg/L	0.0004	0.0003	
Uranium	ug/L	<0.1	0.1	33 Short-term 15 Long-term
Vanadium	mg/L	<0.0001	0.0001	
Zinc	mg/L	<0.0005	0.0016	0.03

* Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

9 REPORTABLE SPILLS

On August 1, 2012 an incident involving drill cuttings occurred on the Kiggavik Lease, located 80 km west of the community of Baker Lake, Nunavut. The incident occurred near the drill site located in the End Grid area, at 64º20'45" N, 97º52'16" W. As approved by the NWB, the drill was located within 30 meters of the ordinary high water mark of the End Grid streams, however the drill proximity to the streams was not a factor in the cause of the spill. A burst in the hose running to the discharge area caused the spill of drill cuttings into the nearest stream channel. The incident was reported to the NT-NU Spill Report Line at 12:37 pm on August 1, 2012.

On August 1, 2012 at approximately 5:00 am, the drill contractor's Pumpman noticed the hose carrying drill cuttings to the discharge area had burst near the End Grid streams, which resulted in the spread of drill cuttings to the closest stream channel (Photograph 9-2). The stream channel had carried a portion of the drill cuttings into End Grid Lake where red water was visible (Photograph 9-1). The drill cuttings are red in color due to the suspended hematitic (iron mineral) clay content. On August 3, 2012 the red color from the cuttings was no longer visible in the streams or in End Grid Lake (Photograph 9-3 and Photograph 9-4). At the time of the spill, no uranium mineralization had been found, and the drill hole was approximately 50 m in depth.

Upon the identification of the spill, the drill was immediately shut down and the Driller, Helper and Pumpman began berming the area around the burst hose to prevent further cuttings from entering the stream channel. The hose was then replaced with a new hose. To prevent future occurrences, the Project Geologist requested that the Pumpman walk the length of the hose every 1.5 hours to inspect the hose for any leaks or breakages. The ERP Supervisor and Project Geologist visited the site later that morning to verify that the spill had been stopped and corrective actions had been taken to prevent the cuttings from traveling into the stream and lake. The spill was reported the Nunavut Spill Report Line, the Department of Environment-Government of Nunavut, NWB, KIA, and AANDC on August 2, 2012, and a detailed spill report was submitted on September 1, 2012.

Prior to drilling within 30 m of the high water mark, a water sample was taken at the mouth of the stream of End Grid Lake on July 14, 2012. Following identification of the spill, a sample was

taken on August 2, 2012. Water samples of End Grid Lake were also taken after drilling was complete on August 30, 2012. Water analysis results are provided in the following Table 9-1.

Table 9-1 Water Analysis Results

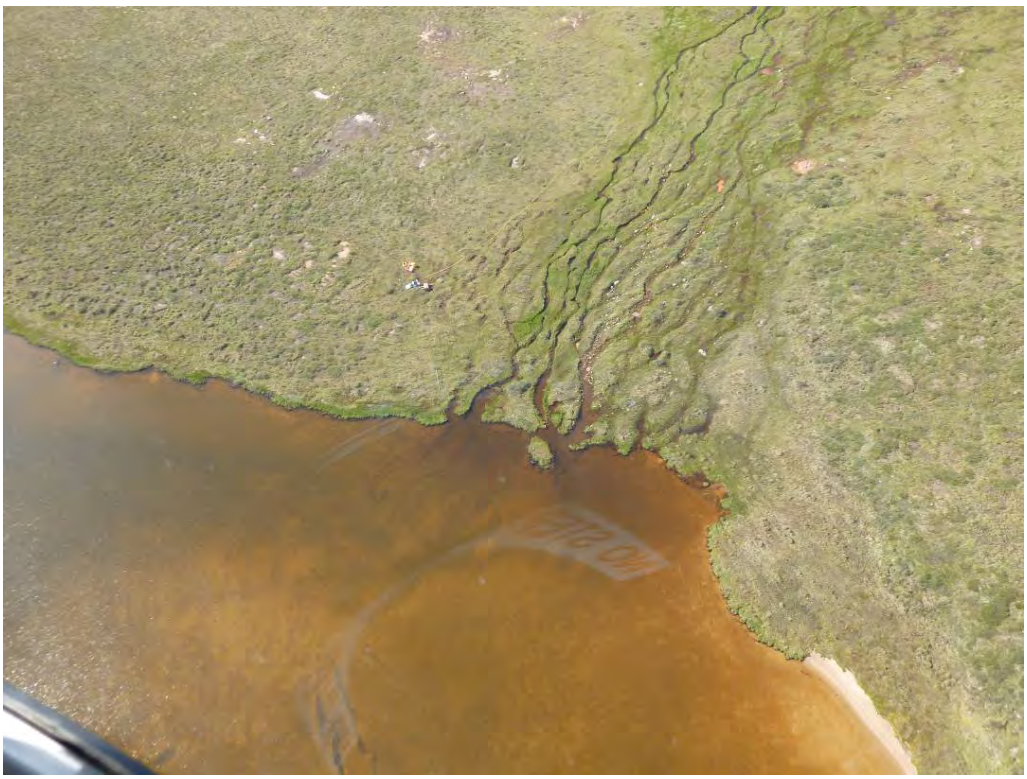
Analyte	Units	End Grid Lake July 14, 2012	End Grid Lake August 2, 2012	End Grid Lake August 30, 2012	CCME*
pH	pH units	6.47	6.83	6.85	6.5-9
Specific conductivity	uS/cm	23	27	54	
Mercury (Hg)	ug/L	<0.02	<0.02	<0.02	0.026
Total dissolved solids	mg/L	17	33	46	
Aluminum (Al)	mg/L	0.023	0.48	0.031	0.005 (pH <6.5) 0.1 (pH ≥6.5)
Antimony (Sb)	mg/L	<0.0002	0.0003	<0.0002	
Arsenic (As)	ug/L	0.2	0.2	0.2	5
Barium (Ba)	mg/L	0.024	0.033	0.048	
Beryllium (Be)	mg/L	<0.0001	<0.0001	<0.0001	
Boron (B)	mg/L	<0.01	<0.01	<0.01	29 Short-term 1.5 Long-term
Cadmium (Cd)	mg/L	0.00001	0.00001	<0.00001	0.000005
Chromium (Cr)	mg/L	<0.0005	<0.0005	<0.0005	
Cobalt (Co)	mg/L	0.0001	0.0001	0.0002	
Copper (Cu)	mg/L	0.0006	0.0006	0.0005	0.002
Iron (Fe)	mg/L	0.44	0.46	0.51	0.3
Lead (Pb)	mg/L	<0.0001	0.0001	<0.0001	0.001
Lithium (Li)	ug/L	0.4	0.6	1.3	
Manganese (Mn)	mg/L	0.015	0.02	0.019	
Molybdenum (Mo)	mg/L	<0.0001	<0.0001	<0.0001	0.073
Nickel (Ni)	mg/L	0.0005	0.0007	0.0011	0.025
Selenium (Se)	mg/L	<0.0001	<0.0001	<0.0001	0.001
Silver (Ag)	mg/L	<0.00005	0.00005	<0.00005	0.0001
Strontium (Sr)	mg/L	0.018	0.022	0.037	
Thallium (Tl)	mg/L	<0.0002	<0.0002	<0.0002	0.0008
Tin (Sn)	mg/L	<0.0001	<0.0001	<0.0001	
Titanium (Ti)	mg/L	0.0004	0.0046	0.0003	
Uranium (U)	ug/L	<0.1	0.9	0.1	33 Short-term 15 Long-term
Vanadium (V)	mg/L	<0.0001	0.0004	0.0001	
Zinc (Zn)	mg/L	<0.0005	0.0012	0.0016	0.03

* Canadian Council Ministers of Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. 1999.

Photograph 9-1 End Grid Lake and Streams - August 1, 2012

Photograph 9-2 Location of Split Hose Where Spill Originated - August 1, 2012

Photograph 9-3 Aerial of End Grid Area - August 3, 2012



Photograph 9-4 End Grid Lake and Streams - August 3, 2012

APPENDIX A - OPERATIONAL PLANS

Spill Contingency Plan

Radiation Protection Plan

Waste Management Plan

Wildlife Mitigation and Monitoring Plan

Abandonment and Restoration Plan

Noise Abatement Plan

Uranium Exploration Plan

AREVA Resources Canada Inc.

Kiggavik Project, Nunavut

SPILL CONTINGENCY PLAN

May 2012 – Version 7

REQUIRED USERS

Required and other users are responsible for using the current version of the Spill Contingency Plan as posted on Q:\Exploration\IMS . Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	October 2007	Update to reflect changes in field activities/capabilities and goals of continual improvement
2	1	May 2008	Updated to reflect comments and conditions received by the Nunavut Water Board associated with the issuance of water licence no. 2BE-KIG0812
3	0	January 2009	Update to reflect changes in field activities/capabilities and goals of continual improvement
4	0	March 2009	Updated to reflect changes in field activities/capabilities and goals of continual improvement
5	0	January 2010	Updated to reflect changes in field activities/capabilities and goals of continual improvement
6	0	May 2011	Updated to reflect personnel titles, grammatical changes, reorganized information and clarified responsibilities. Made consistent with other Plans and Manual and updated to reflect changes in fuel storage and equipment.
7		May 2012	Updated to reflect personnel changes, grammatical changes, reorganized information and clarified responsibilities. Made consistent with other Plans.

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Environment and Radiation Protection Supervisor

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

TABLE OF CONTENTS

LIST OF APPENDICES

1 INTRODUCTION

This Plan applies to the Kiggavik Project located approximately 80km west of Baker Lake and all points located between the site and Baker Lake. In addition, the Plan is made available the Kiggavik Site, AREVA Resources Canada Inc (ARC) Baker Lake Office as well as ARC's corporate office.

1.1 Purpose and Scope

The primary objective of the Spill Contingency Plan is to help prevent or reduce the potential of spills of pollutants and prevent, reduce or eliminate any adverse effects that may result. As such, the Plan provides information and guidance on actions important for the prevention of spills and procedures to detect and respond to spills if they occur.

The Plan will evoke a risk management approach when considering potential spill events. Effective implementation of spill prevention planning is also an important proactive component for minimizing the risks posed by spills. By implementing effective spill prevention, the risk of spills can be reduced in magnitude and perhaps avoided.

Furthermore, the purpose of this plan is to identify safe, effective and efficient response methods to spills in the vicinity of ARC's operations in Nunavut. This Plan is intended to satisfy Nunavut R-068-93 Spill Contingency Planning and Reporting Regulations. In said regulations, "spill" is defined as "…a discharge of a contaminant in contravention of the Act or regulations made under the Act or a permit or license issued under the Act or regulations made under the Act." ARC's working definition of a spill is defined as any accidental discharge to the environment of a hazardous material.

1.2 Revision to Plan

The Kiggavik Radiation Protection Plan is reviewed on an annual basis and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this manual.

1.3 Responsibilities

The Senior Project Geologist is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Environment and Radiation Protection (ERP) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 SITE INFORMATION

2.1 Location

The Kiggavik Project includes two properties:

- The Kiggavik site is located at approximately 64°26'N and 97° 37'W. The property consists of 17 mineral leases totalling 3,972ha (officially 9,808acres). All leases are currently on Crown Land (ie: surface and subsurface rights are administered by Aboriginal Affairs and Northern Development Canada (AANDC).

- The Sissons site is situated roughly 17km south-west of Kiggavik at approximately 64°20'N and 97°52'W. The Sissons property consists of 22 mineral leases totally 14,730ha (officially 36,371.50acres). Five of the mineral leases, including those containing the Andrew Lake and End Grid deposits, are located on Inuit Owned Land subsurface parcels, as such surface rights are administered by the Kivalliq Inuit Association and subsurface rights are "grandfathered" – administered by AANDC.

The Kiggavik camp can accommodate approximately 60 people. The Project area currently includes the following infrastructure:

- One storage shed/back-up generator/shop
- One generator building (housing the current generator)
- One helicopter storage/shop
- One kitchen with storage
- One washroom/dry building constructed with separate male/female facilities
- Two offices
- 17 sleeping units (one is a first aid shack)
- One fuel storage areas (equipped with Arctic Berms)
- Grey water collection area
- Industrial incinerator
- Core storage
- Five core logging tents
- Radioactive materials storage compound
- Fuel esker containing 8 bulk fuel tanks, three for Jet-B fuel and five for diesel fuel, and fuel drums stored on secondary containment

Detailed site maps showing topography can be found in Appendix III.

2.2 Petroleum and Chemical Product Storage and Inventory

Below is a list of products used, along with the maximum amount stored at camp and how they are stored at the Project site.

Chemical/Material	Amount	Storage Type
Diesel Fuel	250000 L	EnviroTanks
Jet B Fuel	150000 L	EnviroTanks
Gasoline	1025 L	Secondary Containment
Generator Oil	20 x 20L (400 L)	Secondary Containment
Hydraulic Oil	20 x 20L (400 L)	Secondary Containment
Engine Oil	20 x 20L (400 L)	Secondary Containment
Propane	75 x 100 lb (7500 lb)	Secondary Containment
Grease (for grease gun)	5 cases x 12 tubes (60 tubes)	Secondary Containment
Salt	50000 lbs	Secondary Containment
Cement	15000 lbs	Secondary Containment

A specific inventory of all petroleum and chemical products used during the field operations is recorded at site.

2.2.1 Fuel Tanks

To accommodate increased fuel demand and reduce the potential of fuel spills, bulk fuel storage tanks were installed. The eight double-walled steel EnviroTanks, each with a capacity of 50,000 L were installed at the esker located on the Kiggavik lease, east of the Kiggavik camp. Three tanks on the north side of the esker are for the storage of Jet-B fuel, and five tanks on the south side of the esker are for the storage of diesel fuel as shown in Figure 2.1. The coordinates are as follows:

- 14W 561512, 7145240

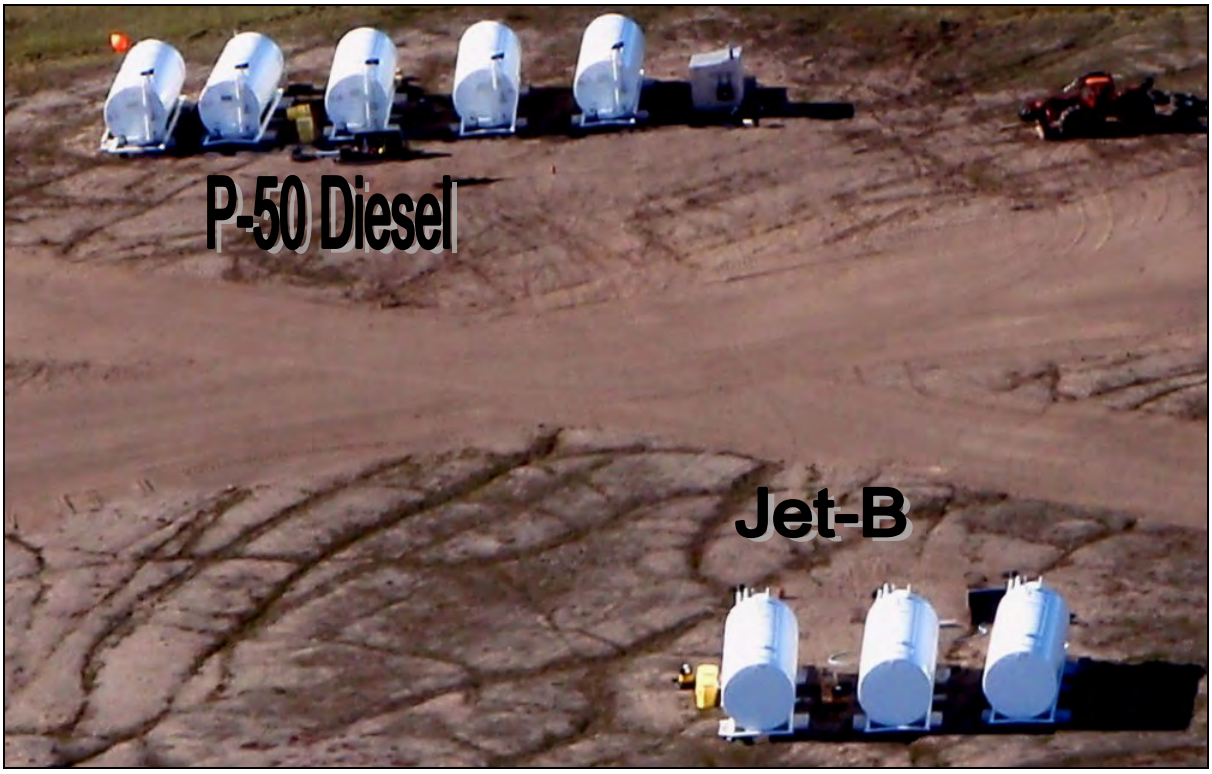


Figure 2.1 Kiggavik Fuel Cache

The site layout and tanks have been designed by a consulting professional engineer and have been installed by a registered company/petroleum contractor to ensure compliance with the Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003. In 2007 Golder Associates (Golder) conducted an engineering assessment to identify potential issues with the installation of storage tanks. Recommendations were provided for the foundation support for the storage tanks. To mitigate the potential issues described in the report, Golder recommended that the tanks be placed on timbers located under each saddle to provide an increased bearing area.

The use of timbers is a deviation from the CCME COP, however it should be noted that this is common practice in the area and AREVA received permission from the area Fire Marshal, Tim Hinds with the Government of Nunavut-Community and Government Services via email (Trevor Carlson, AREVA) on November 20th, 2007.

Double walled steel EnviroTanks and associated pump meet the requirements of secondary containment within their own structure. For further secondary containment, rubberized berms (Arctic berms) or other suitable lined structures will be utilized during fuel transfers to minimize the potential for fuel spills where possible. It is required to use absorbent padding near fuel nozzle to control dripping fuel. Further protection against spills is provided by high level alarms, overfill preventers, and catch basins around each fill pipe.

The design basis, operation and maintenance requirements for all petroleum storage and handling on site are based on the CCME Environmental Code of Practice for Aboveground and Underground

Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003 and in compliance with the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*, under the *Canadian Environmental Protection Act, 1999* (CEPA 1999).

The fuel storage system at the Kiggavik site has been registered with Environment Canada (EC) through an online database, the Federal Identification Registry for Storage Tank Systems (FIRSTS).

10,000 L fuel bladders containing Jet-B or P-50 diesel fuel are transported to the fuel cache during the winter via ground transport (snow cats, foremosts or other tundra trucks). The fuel is then transferred from the fuel bladders to the EnviroTanks.

2.2.2 Drums

Presently a fuel cache used for drums is located at the Kiggavik Camp. :

- Fuel cache at Kiggavik Camp: 14W 564464, 7146782

Unleaded gasoline and propane cylinders may be brought to site during the winter haul or by aircraft from Baker Lake. All fuel containers are labelled, identifying the contents and the name “AREVA”. Diesel fuel may be transferred from the Enviro Tanks to drums or double-walled fuel tanks for use in camp and/or drill sites.

Fuel drums of diesel fuel and unleaded gasoline at the Kiggavik Project are stored in approved 205L steel drums within secondary containment systems at the camp site. The secondary containment system presently being used is adequate to contain 110% of the total aggregate storage capacity of the drums. Secondary containment is used for all liquid fuels, and lubricants. Drill additives are stored in sea containers to keep away from moisture.

The following photo indicates the type of secondary containment utilized for the storage of petroleum products and other hazardous materials and hazardous waste products. The Insta-Berm made of industrial-strength fabrics, is a durable and easy-to-use environmental safeguard. The Insta-Berm is used for secondary containment of toxic materials in many applications, to help industries meet today's guidelines on environmental protection.

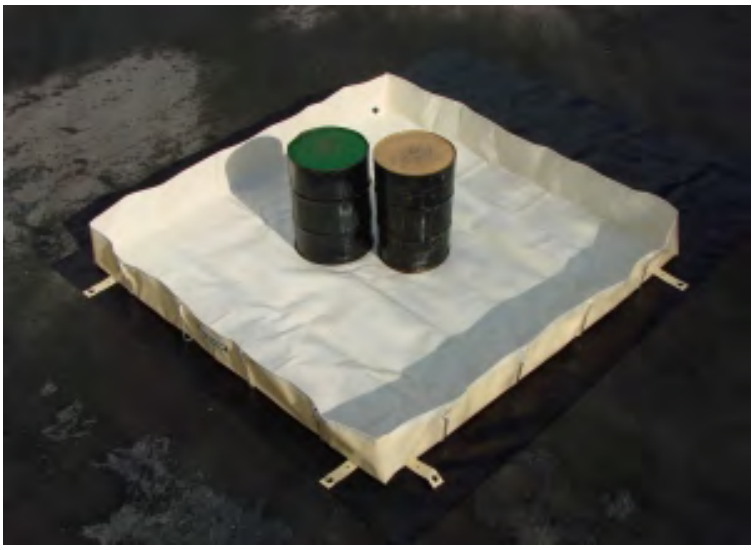


Figure 2.2 Insta-berm

Absorbent matting and/or drip pans must be placed under all areas where fuel leaks are likely to occur (e.g.: fuel line hose connections, fuelling stations, generators, water pump), and these areas must be inspected on a daily basis where possible.

Waste oil, waste filters, and cleaned-up spill materials are contained for removal from the site, and disposed of in accordance with applicable regulations. Degreasing agents used for maintenance of equipment parts and grease are contained for removal from the site.

For longer storage, during the winter season, or until an approved handling facility can be located, waste products are temporarily stored in sea-cans on site.

2.3 Petroleum Product Transfer

To minimize fuel spillage associated with dispensing of product, all dispensing and tank filling operations is attended and involves the use of manually held open nozzles equipped with automatic shut off mechanisms.

Smoking, sparks or open flames are prohibited in fuel storage and fuelling areas at all times. Petroleum transfer operations will be carried out by trained personnel.

2.4 Location and Content of Spill Kits

Spill kits can vary in size and content depending on supplier and manufacturer however to remain consistent and provide adequate spill supplies, ARC has chosen two types of spill kits which are considered to be standard. The kits generally include the following contents, or similar:

1. Universal Emergency Response Kit 30Gallon/135L

    - Sorbant capacity of 96L
    - 4 socks (3” X 10’)

- 75 pads
- 1 drain cover
- 1 caution tape
- 2 pairs nitrile gloves
- 2 pairs safety goggles
- 2 protective coveralls
- 5 disposable bags
- 1 instruction book

2. Universal Overpack Kits 95 US Gallon Drums

- Sorbant capacity of 275L
- 4 socks (3" x 10')
- 5 socks (3" x 4')
- 50 pads
- 5 pillows
- 1 roll
- 1 drain cover
- 1 caution tape
- 2 pairs nitrile gloves
- 2 pairs safety goggles
- 2 protective coveralls
- 10 disposable bags
- 1 instruction book

A variety of spill kits are available, other kits than those listed above may be purchased for a variety of reasons (availability, intended use, etc). All spill kits contain an itemized list of its contents and inventory of the kits on site is conducted at the beginning of each field season and immediately following use to identify and replenish missing items.

Figure 2.3 Example of the spill kits utilized at the Project site.

In addition, the following spill response material is also readily available in the generator building for spill response:

- Plugging compound
- Bulk supplies of oil absorbent pads and socks
- Aluminium or brass shovels or tools
- Bonding cables

Due to the volume of fuel being stored in the fuel tank storage system and the remote nature of the sites, at least one of the Bulk Storage Site Spill Kits 95 US Gallon Spill Kits will be present for each 100,000L of fuel being stored.

In addition,

- At least one empty fuel drum and a pump will be located at each fuel cache and tank storage system in the event of damaged or leaking drums.
- Fire extinguishers of the proper type, size and number will be stationed in each building, at the fuel tank storage system and near each site where equipment is normally serviced and anywhere else it is deemed advisable.
- A supply of sealable 20-litre steel pails or 205-litre drums will be reserved for the collection and storage of used absorbent materials. Steel drums, clearly labelled for the storage of spent absorbent materials will be located at camp and at each fuel storage tank location as well as at each cache of drummed fuel or lubricants.

2.5 Orientation

All personnel at camp (ARC employees, contractors, and long term visitors) are given formal orientation upon arrival at camp. The Spill Contingency Plan is reviewed during orientation which and includes the location of the Material Safety Data Sheets, location of spill kits and additional supplies or tools. Training for spill contingency consists of alerting all personnel to be watchful for any leaks or spills and where these are most likely, instruction in the use of the equipment and materials, introduction to the protocol of the chain of command and the legal requirement to report certain spills, and how to collect, store and dispose of spilled product.

3 POTENTIAL HAZARDS, MITIGATION AND PREVENTATIVE MEASURES

3.1 Potential Hazards

Potential sources for spills have been identified as follows:

- Stored drums of P-50 diesel, gasoline, waste fuel, and waste oil may leak or rupture
- Overfilling of tank(s) at the fuel tank storage system of Jet-B or P-50 diesel
- Transfer of fuel between EnviroTanks, drums and fuel bladders
- Transportation of fuel during winter haul
- Fire at the fuel tank storage system
- Collision at the fuel tank storage system
- Vandalism of fuel tank storage system
- Propane cylinders: propane leaks may occur at the valves
- Refuelling equipment such as diamond drill equipment, helicopters, camp generator, stoves, incinerator, wheeled vehicles, snowmobiles and pumps. Incidents involving leaking or dripping fuels and oils may occur due to malfunctions, impact damage, lack of regular maintenance, improper storage, or faulty operation
- Damaged lead/acid batteries causing spills of acid
- Improper drilling or transport of cuttings bags causing a spill of radiologically contaminated drill cuttings and drill return water

3.2 Mitigation and Preventative Measures

Kiggavik's Environmental Code of Practice discusses how to conduct activities so as to minimize the risk of spill. In addition, the following measures will further minimize the potential for spills during fuel handling, transfer and storage:

- Fuel transfer hoses with cam lock mechanisms to be used when transferring bulk fuel deliveries into the bulk storage tanks.
- Carefully monitor fuel content in the receiving vessel during transfer. Always have additional absorbent pads on hand while transferring fuel.
- Clean up drips and minor spills immediately.
- Regularly inspect drums, tanks and hoses for leaks or potential to leak and for proper storage.
- Create fuel caches that are located at least 30 m from the normal high-water mark of any water body.
- Inventory and reconciliation procedures developed to ensure tanks are not overtopped and to ensure that tank leakage is not occurring.
- Overfill protection on tanks include visual and audible alarms; catch basins around fill pipe; additional secondary containment at transfer locations; corrosion protection
- Train personnel, especially those who will be operators, in proper fuel handling and spill response procedures. This training is to include a "mock" spill, review of spill kit contents and their use and reporting.

3.2.1 Spill of Fuel from Metal Drums on Tundra

Metal drums are stored in such a manner that they are not susceptible to tipping over, rolling or otherwise being unstable. Care is exercised so that nothing can cause damage to metal fuel drums by falling or rolling onto or into them. The use of a ramp or a cushion (automotive tire) while unloading metal fuel drums from aircrafts ensures that they are not damaged.

All drums of fuel are stored at fuel caches in secondary containment.

3.2.2 Spill of Fuel from Fuel Tank Storage System

To prevent spillage during the filling of the fuel tank storage system the following items will be in place:

- Visible and audible high level alarm
- Automatic high liquid shut off device
- Manual dips conducted in conjunction with the inventory and reconciliation procedures to be carried out by the delivery truck operators and site personnel
- All tanks are double-walled
- Spill/Overfill protection – catch basins around the fill pipe will collect any liquid spilled during connecting or disconnecting of the fill hose
- Corrosion Protection – provided by painting of the tanks
- Drums will be placed in appropriated lined structures for fuel transfer from tank to drum

Most releases at a fuel tank storage system are due to piping and line failure. This system of tanks are independent of each other and do not require any piping.

All personnel conducting fuel transfers are to be adequately trained in the procedure and spill contingency.

Spills or leaks are known to occur due to improper management of tanks prior to installation. All tanks located at the Kiggavik Sisson site have been inspected by a qualified person prior to filling and again prior to initial use.

3.2.3 Winter Fuel Hauling

Refer to Winter Road Plan for further details regarding transport, safety and training requirements used to minimize hazards generated during the winter haul.

3.2.4 Leak of Liquid Fuel from Distribution Lines

Stability of all storage tanks and distribution assemblies is of utmost importance to ensure that the risk of damage is minimized. All stands for reservoir tanks and fuel tanks are constructed to strength standards beyond those required. Distribution lines from reservoir tanks and fuel tanks are fitted with appropriate shut-off valves immediately downstream from the tank. All valves are closed when tank is not in use. All associated distribution lines are installed in such a way to prevent being chafed in the wind, chewed on by animals or tripped on by humans. This is done by securing it to rigid structures,

encasing it in armour or any other effective manner. These measures apply broadly to oil, jet fuel, gasoline, and propane set-ups.

3.2.5 Spill of Liquid Fuel into Lake Water

Liquid fuel in metal drums must be at a minimum of 30 m from ordinary high water mark on stable and level ground unless approved by regulatory agencies. Refuelling must not take place below the high water mark of any water body under any circumstance.

3.2.6 Release of Propane

Propane is stored in certified containers and is inspected and monitored on a regular basis for any signs of deterioration or corrosion. Containers are secured and fastened in an upright position to ensure there is no risk of damage to the regulator in the event of a fall.

Only qualified gas fitters will connect or disconnect piping to any bulk propane storage system. In the event that larger bullets are introduced on site, only qualified gas fitters will connect or disconnect the piping and crash protection will be provided once there are vehicles on site.

3.2.7 Spill of Battery Acid

Acquisition of non-spillable batteries reduces the risk of a spill of this type. These batteries can be shipped by air as they are exempt from UN2800 classification. All batteries are protected from damage by fastening them into the space designed for them when used with various power equipment and stored safely when not in use.

3.2.8 Fire at the Fuel Tank Storage System

Grounding cables are used for all transfers of bulk gasoline or jet fuel to minimize to potential of a static discharge and potential fire.

3.2.9 Crash at Fuel Storage Tanks

The following measures will be followed to minimize the risk of a crash at the fuel storage areas:

- Clear communication between aircraft (fixed wing and helicopters)
- Use of wind socks
- In the event that the use of vehicles is introduced in the operation, crash protection will be put in place

3.2.10 Spill of Radiologically Contaminated Drill Cuttings

During drilling activities, drill mud solids or cuttings in non-mineralized zones are deposited on the ground in low-lying areas. When mineralized core is intercepted, all drill mud and cuttings are collected in appropriate containers and categorized as radioactive through appropriate radiation measurements in accordance with work instructions. A gamma survey is also conducted before and after drilling activities at each hole to ensure there is no radiologically contaminated material at the site.

3.2.11 Spill of Potentially Contaminated Drill Return Water

Return water from drilling activities, including general drainage from the drill footprint, are diverted into low-lying areas in such a way so as to stop these waters from directly entering lakes and streams. Low lying depressions where non-mineralized drill cuttings and drill return water are deposited are monitored while in use.

In order to reduce risk of water pooling in the drill area, clean water not used in the drilling process is pumped back to its source.

4 SPILL RESPONSE

4.1 Response to a Spill – Containment and Clean-Up

In the case of any spill or other environmental emergency, it is necessary to react in the most immediate, safe, and environmentally responsible manner. No spill or incident is so minor that it can be ignored.

The basic steps of the response plan are as follows:

Ensure the safety of all persons at all times.

The safety of yourself and others is the most important consideration when responding to a spill. As such, all actions that you perform as part of your spill response must only be undertaken if they can be undertaken in a safe manner. If an action can not be undertaken in a safe manner or if you do not feel that you are adequately trained or equipped to respond to a spill, the only appropriate thing to do is to safely evacuate all personnel in the area to a safe area away from the spill. Once everyone is safe you will then need to request assistance from trained emergency responders with the appropriate resources to manage the spill safely and effectively.

KEY POINTS TO CONSIDER WHEN REPONDING TO A SPILL

- *It is your responsibility to act safely, using appropriate personal protective equipment and work practice.*
- *It is your responsibility to respect the safety of others in the area.*
- *It is your responsibility to refuse to perform activities that you feel are unsafe.*
- *It is your responsibility to inform those involved or in the area if you believe that their actions, or proposed actions, are unsafe. This includes colleagues, first responders, contractors, members of the public, etc.*

Identify and find the spill substance and its source.

Individual discovering the spill shall:

- Move upwind of the material
- Call for help – contact the Facility Supervisor or designate
- Attempt to stop leak – only if safe to do so
- Attempt to contain spilled material – only if safe to do so

Facility Supervisor (or designate) shall:

- Designate responders and proceed to the scene of the spill.
- The responders (including the Facility Supervisor if necessary) shall attempt to stop further spillage and contain the spilled material if safe to do so.
- Ensure documentation of the spill is completed using the Spill Report Form, the NT-NU 24-Hour Spill Report Line was contacted immediately (see Section 4.2 for Spill Reporting requirements) and the appropriate regulatory agencies have been contacted.

ERP Supervisor

- Provide assistance and expertise in the response of a spill
- Once under control, shall interview the individual who discovered spill. Noting name, time discovered, and details on how the spill occurred, any actions taken by the individual to stop the spill.
- Submit Spill Report required regulatory agencies within seven calendar days of the incident (see Section 4.2)
- Within 30 days ensure a written detailed report is prepared for submittal to required regulatory agencies (see Section 4.2).

Responders shall:

- Position themselves upwind of the spill.
- Determine what has been spilled.
- Consult the Material Safety Data Sheet (MSDS) for the product in order to determine the appropriate personal protective equipment and to understand the physical properties of what was spilled.
- If the spilled substance is flammable (Gasoline or Jet Fuel), eliminate all ignition sources and shut off machinery in the area.
- If save to do so, take actions to ensure that the leak or spill has been stopped at the source (i.e.: shut off valves, reconnect hoses, etc.).
- Contain spill with appropriate material and equipment (i.e.: spill response kit, etc.). Refer to the MSDS if this is a controlled substance. Pump large spills into barrels or other suitable container as available. **Ensure that grounding or bonding cables are used for all flammable product transfers.**
- Control access to the spill area and keep all bystanders away. If necessary, barricade the spill area. Do not use flares unless you are certain the spilled material and its vapours are not flammable or explosive.
- If safe to do, keep spilled material out of waterways. Use aluminium/non-sparking shovels to dig trenches or make soil and sand barriers or utilize the placement of socks as barriers
- If a fuel or oil spill, place contaminated absorbent and associated materials into steel pails or drums for removal from the site.
- If radioactive material, place material into appropriate container (i.e. cuttings bag or IP3 pail) to be stored in radioactive storage compound.
- If a spill has entered flowing water, take a sample immediately upstream of the spill and downstream (e.g.: 50 m, 150 m and 500 m from spill)

The following table demonstrates the spill supplies that may be utilized during the response to a spill on site (items not stored in spill kits and kit replacement items are stored in the generator building):

Incident	Spill Supplies	Use
Wet Spill	Drums, with removable lids, that contain bailers	For manual removal of large liquid spills Empty drums
	Folded sweeps and white rolls	Skimming of gas or diesel from water body
	Socks, peat moss	Containment of wet spill on land
	Pads, rolls, bags of dry absorbent	Cleanup of wet spills
Punctured Drum	Overpack (plastic drum) Plug 'n Dyke	Either: 1) place overpack overtop of leaking drum, lay overpack and drum on its side, then flip upright 2)use Plug 'n Dyke or other plugging compounds to seal and stop leak
Dry Spill	Plastic sheet (roll), mallet, spikes, knife	Covering dry spills to protect from wind and rain

If necessary ask for help and wait for others with the appropriate training and/or equipment to arrive. Acting inappropriately can often be dangerous to yourself, others or to the environment.

Implement any necessary cleanup and/or remedial action in a safe manner; this may be coordinated and or conducted by a third party consultant, if necessary.

Report the spill as per Section 5 of this Plan once it is safe to do so. Do not delay reporting as there are legal requirements in this regard.

4.2 Examples of Spill Scenarios

4.2.1 Spill of Fuel from Metal Drums, 10,000 L Fuel Bladders, or Fuel Tanks on Tundra

A puncture or rupture of containers containing liquid fuels should initially be assessed for risk of ignition. Sources of ignition will be extinguished or isolated from the spill area if safe to do so. Using appropriate personal protective equipment as described in the MSDS efforts should be undertaken to plug punctures with appropriate material from the spill kit (plugging compound or other improvised materials). Ruptures or holes should be high-centered to stop further spillage of fuel. Absorbent

materials should be used to absorb spilled fuel. A containment berm should be built using available materials such as soil, snow, absorbent socks, portable berms and/or tarps to contain a large spill.

Report the spill to the Facility and ERP Supervisors or designates immediately.

Remove the spilled products using absorbent material or soil, gravel or snow, placing all recovered spilled fuel and spent absorbents into appropriate containers (metal cans, pails or drums in good condition). Again, all fuel skimmed or wicked off of the ground is to be disposed of, in appropriate steel containers. High-centered ruptures will be used as a point of entry for manually-operated fuel transfer pump suction tubes, and remaining fuel is removed to a sound drum. Small amounts of contaminated soil, vegetation or gravel is removed and placed into sealable steel drums or pail and then disposed of appropriately. Large areas of spilled product on the ground are only to be remediated after consultation with ARC environmental personnel, regulators, etc. to avoid unnecessary damage to the environment.

Before commencing removal of soil or vegetation regulatory agencies will be contacted.

If spill of significant volume occurs at one of the fuel storage tanks or from a 10,000 L fuel bladder attempt to prevent the spread of the fuel if safe to do so and immediately contact ARC personnel to hire assistance with the spill response and clean-up.

4.2.2 Leak of Liquid Fuel from Distribution Lines

A detected leak from a distribution line assembly is to be initially assessed for risk of ignition. Sources of ignition are to be extinguished or isolated from the leak if safe to do so. If safe to do so, the shut-off valve on the tank and/or distribution line is to be turned off. Report Spill to the Facility and ERP Supervisors or designates immediately. Absorbent material is placed on the spilled fuel; if spilled onto snow or ice it is scooped up with an aluminium (non-sparking) shovel and stored in an appropriate sealable steel container. Ultimate disposal of these materials is only to be done after consultation with the ERP group and the appropriate regulatory agencies.

4.2.3 Spill of Liquid Fuel into Lake Water

If safe to do so, identify the source of the spill and prevent further release of fuel. Report the spill to the Facility and ERP Supervisors or designates immediately. Never attempt to contain or clean up a spill of gasoline on water, the risk of fire is simply too high. Confinement needs to occur as close to the release point as possible. The collection of liquid diesel or lubricating oil in lake water is attempted with floating booms of petroleum absorbent material, after vapours have dissipated. For larger spills of diesel or lubricating oil, raw liquid can often be removed by skimming while absorbent pads can be used to collect small spills.

Prior to attempting any clean up on water, a site specific safety plan needs to be developed that factors in water safety aspects.

All fuel skimmed or wicked off of the water surface as well as spent absorbent materials must be disposed of, in appropriate sealable steel containers. Ultimate disposal of these materials shall only be done after consultation with the ERP Group and the appropriate regulatory agencies.

4.2.4 Fire at Fuel Storage Tanks

In the event that a fire occurs at the fuel storage tanks, it is ARC's primary intentions to ensure the safety of the site personnel by allowing the fire to burn. Report the spill to the Facility and ERP Supervisors or designates immediately. Appropriate third party personnel will be contacted to ensure proper response and clean-up occurs.

4.2.5 Release of Propane

Report the spill to the Facility and ERP Supervisors or designates immediately.

No attempt should be made to contain a propane release.

Water spray can be used to knock down vapours and to reduce the risk of ignition.

Small fires can be extinguished with dry chemical or CO_2.

Personnel shall withdraw from the area immediately upon identifying a leak and shall not return until the leak is stopped and all the vapours have diffused. Contact will be made with the proper agency for disposal instructions of a defective container.

4.2.6 Spill of Radiologically Contaminated Drill Cuttings

Report the spill to the Facility and ERP Supervisors or designates immediately. In the event of a spill of any amount of radioactive materials, they will be collected into appropriate storage containers (i.e. cuttings bag or IP3 pail). The site will be remediated as much as practical, meeting/exceeding the minimum necessary abandonment criteria of less than 1 μSv/h above background at a height of 1m.

4.2.7 Spill of Potentially Contaminated/Drill Return Water into a Water Body

Report the spill to the Facility and ERP Supervisors or designates immediately. In the event of a spill of any amount of potentially contaminated/drill return water into a water body, any activities which are the possible cause will cease until a review of the incident has taken place. Water and sediment samples will be taken and a gamma survey conducted on the effected area. Activities will continue once the General Manager, Kiggavik Project or designate is satisfied with the corrective measures taken.

5 SPILL REPORTING REQUIREMENTS

This Plan is initiated by the Project Geologist or designate, this includes initiating response, documenting associated activities and reporting the spill, within 24hours to the NT-NU 24-HOUR SPILL REPORT LINE. All emergency contact phone numbers are located in Appendix I Contact List.

Based on Environment Canada's recommendation, all releases of harmful substances, regardless of quantity are immediately reportable where the release is:

- Near or into a water body;
- Near or into a designated sensitive environment or sensitive wildlife habitat;
- Poses an imminent threat to human health or safety;
- Poses an imminent threat to listed species at risk or its critical habitat.

Based on Nunavut's regulation R-068-93, Spill Contingency Planning and Reporting Regulations, impose a legal requirement to report any spill of flammable liquids greater than 100 L in quantity. In addition, ANY quantity of spilled radioactive material is reportable. The following table (Schedule B) is a reference from regulation R-068-93 and indicates quantities of spilled product that requires reporting to the Department of Environment-Government of Nunavut.

SCHEDULE B

(Section 9)

Item No.	*TDGA Class*	*Description of Contaminant*	*Amount Spoiled*
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 l.
3.	2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100 l.
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 l
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 l or 50 kg
11.	5.2	Organic Peroxides	1 l or 1 kg
12.	6.1	Poisonous substances	5 l or 5 kg
13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 l or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 l or 50 kg
17.	9.2	Environmentally hazardous	1 l or 1 kg
18.	9.3	Dangerous wastes	5 l or 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 l or 0.5 kg
20.	None	Other contaminants	100 l or 100 kg

If you are in doubt as to whether or not a spill is reportable, it is better to err on the side of caution and to report the spill.

5.1 Spill Response Contact List

The most recent *Exploration Emergency Contacts* list is available in drill rigs and field offices. It can be found in the Appendix I of this Plan.

5.2 Reporting Requirements

1. Collect Required Information

During spill response and once safe to do so the following information should be generated and reported to appropriate personnel and agencies (refer and complete the Spill Report Form found in Appendix II):

- Date and time of spill
- Location of spill
- Direction the spill is moving
- Name and number of contact person at location of spill
- Type and quantity of contaminant
- Cause of spill
- Whether spill is contained or stopped
- Description of the existing contaminant
- Action taken to contain, recover, clean-up and dispose of spilled material

2. Report

NOTE: It is the responsibility of the senior AREVA staff on site to report spills to regulatory agencies. Contractors are asked to report all spills to the Project Geologist or designates immediately.

Once safe to do so, immediately notify the following agencies/people of the spill (phone numbers can be found in the *Emergency Contacts List* of this Plan):

- Project Geologist or designate (if not on site during incident)
- ERP Supervisor (if not on site during incident)
- NT-NU 24-Hour Spill Report Line (within 24hours) by phone; utilize the information collected for the spill report form
- Vice President, Exploration
- Manager, Nunavut Affairs and Baker Lake office
- The NWB and AANDC request verbal notification as soon as possible, however they should be notified by the spill report line
- A copy of the written Spill Report Form must be submitted to AANDC (Water Resources Office and Manager of Field Operations), NWB and EC within seven calendar days of the incident
- A detailed report must be submitted to AANDC, NWB and EC within 30 days
- Submit a copy of the Spill Report Form and detailed report to Kivalliq Inuit Association (KIA).

6 TRAINING AND PRACTICE DRILLS

All employees and contractors are to be familiar with the spill response resources at hand, this Contingency Plan, MSDS sheets, and to be trained for initial spill response methods. Involvement of other employees or third parties may be required, from time to time. Annual refreshers are conducted to review the procedures within this plan. As well, at least one practice drill is held per season to allow field-personnel opportunity to practice emergency response skills.

7 REFERENCES

Kiggavik Project Environmental Code of Practice (ECOP)

Kiggavik Project Winter Road Plan

Nunavut R-068-93. Spill Contingency Planning and Reporting Regulations. (September, 2007)

Northwest Territories-Nunavut Spill Report Form. Available at: http://env.gov.nu.ca/programareas/environmentprotection/forms-applications

Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003

Fire Marshal, Tim Hinds with the Government of Nunavut-Community and Government Services via email (Trevor Carlson, AREVA) on November 20th, 2007.

CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003

Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, *Canadian Environmental Protection Act, 1999* (CEPA 1999)

APPENDICES

Appendix I Exploration Emergency Contacts

Available at:

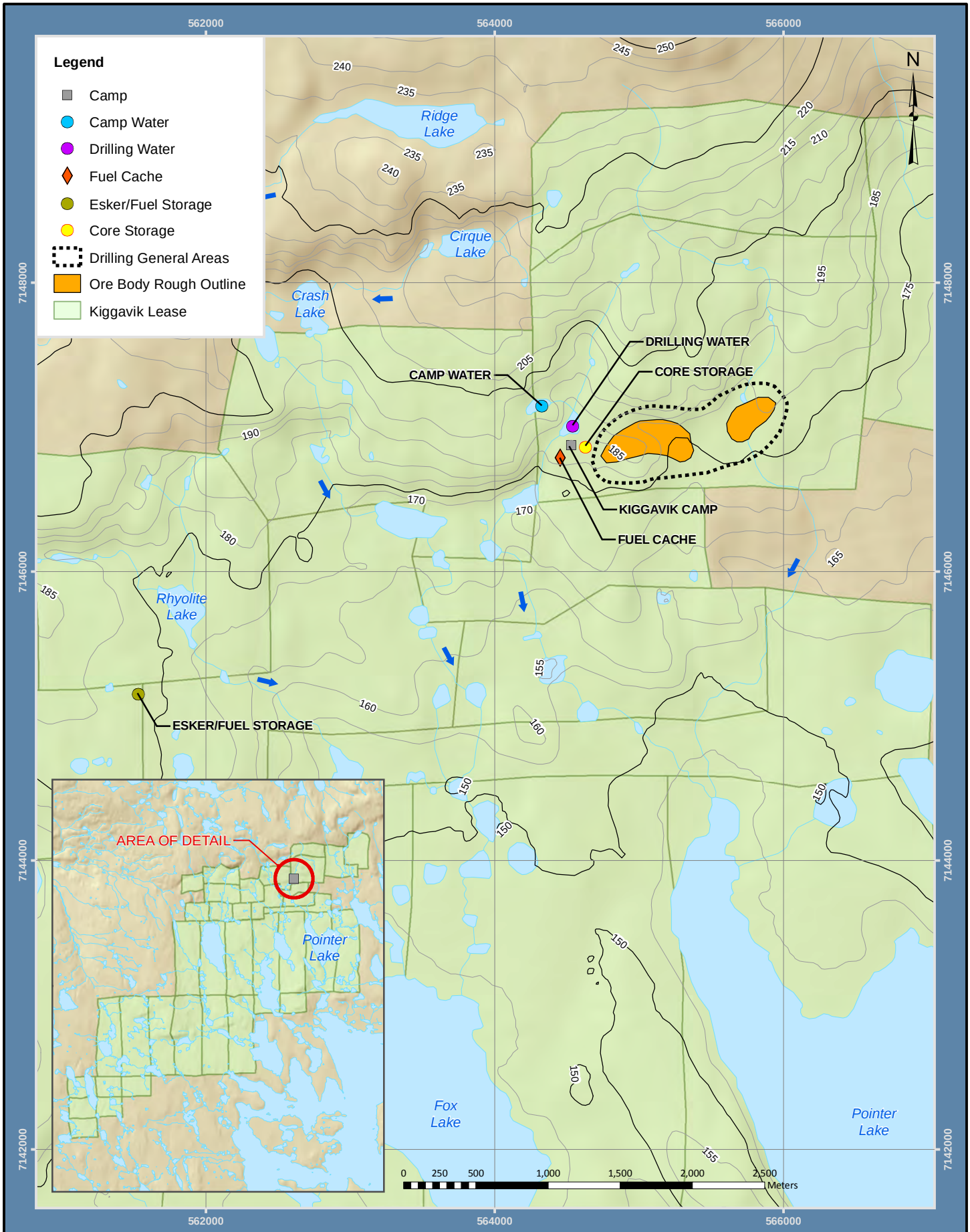
Q:\Exploration\IMS\006_Contacts

Appendix II Spill Report Form

Available at:

http://env.gov.nu.ca/programareas/environmentprotection/forms-applications

Appendix III Maps



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File: KI09A020
Data Sources: *Natural Resources Canada, Geobase®, Nation Topographic Database, AREVA Resources Canada Inc.*

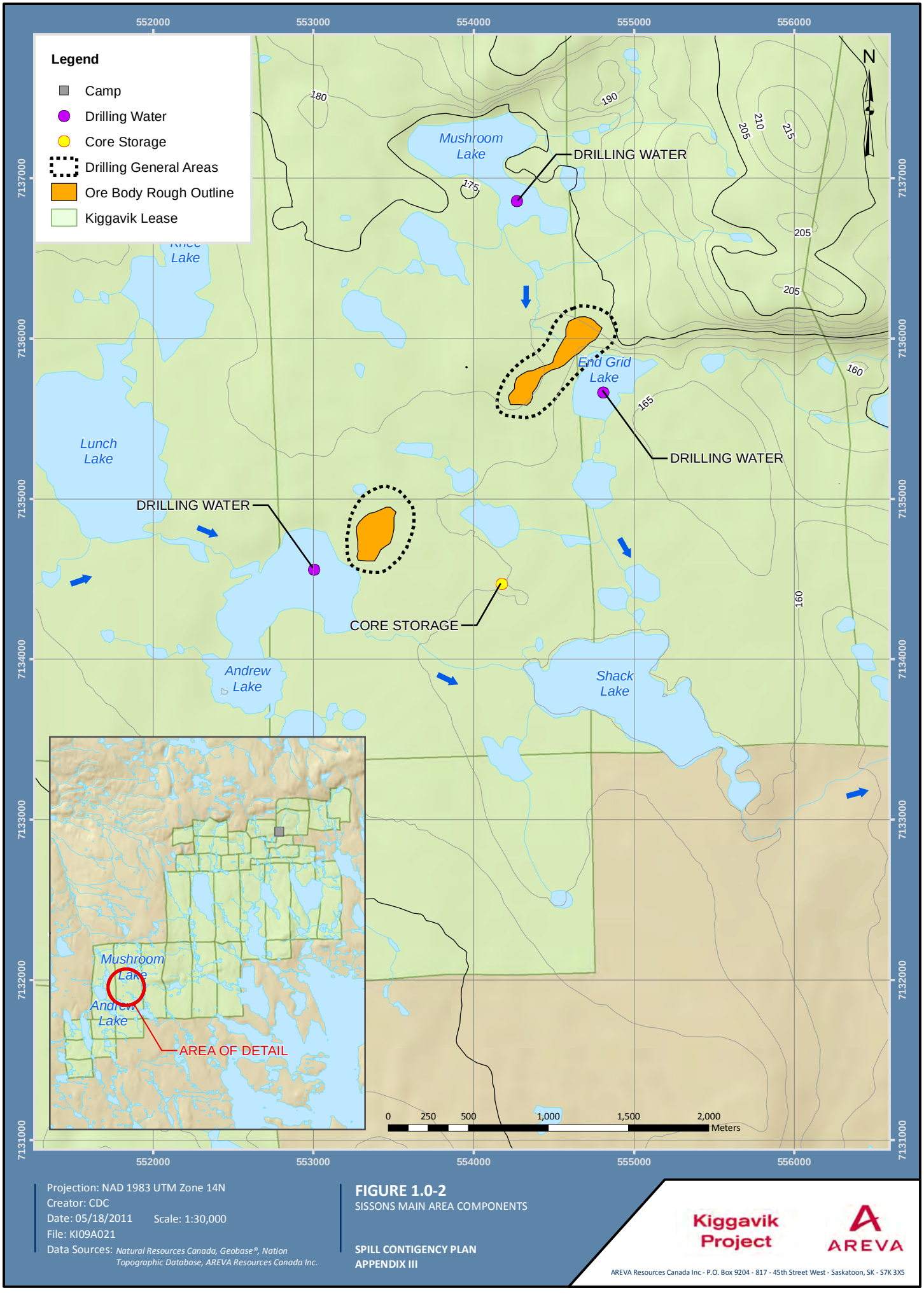
FIGURE 1.0-1
KIGGAVIK MAIN AREA COMPONENTS

SPILL CONTIGENCY PLAN
APPENDIX III

Kiggavik Project

AREVA

AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5



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Data Sources: *Natural Resources Canada, Geobase®, Nation Topographic Database, AREVA Resources Canada Inc.*

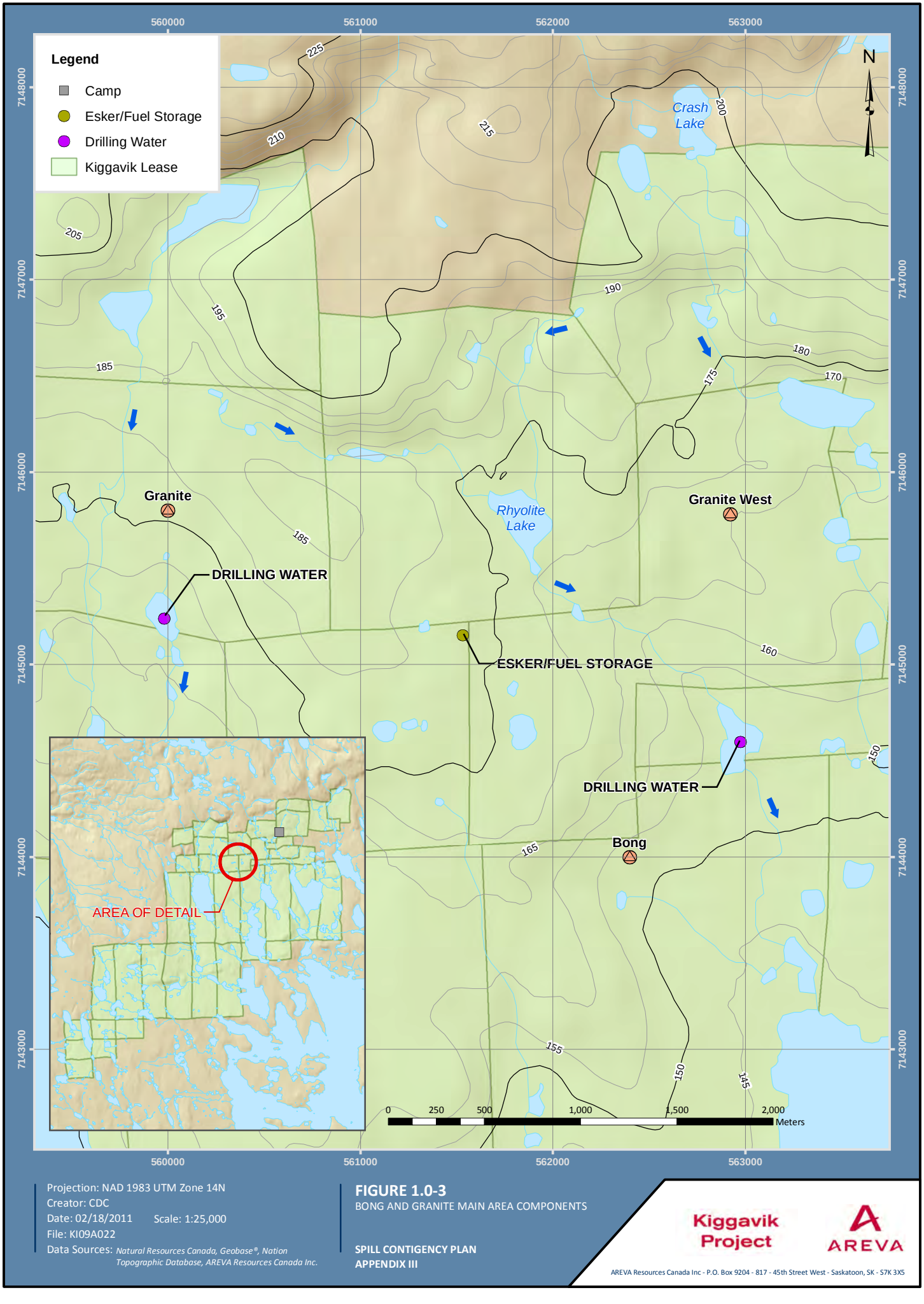
FIGURE 1.0-2
SISSONS MAIN AREA COMPONENTS

SPILL CONTIGENCY PLAN
APPENDIX III

Kiggavik Project

AREVA

AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5



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Creator: CDC
Date: 02/18/2011 Scale: 1:25,000
File: KI09A022
Data Sources: *Natural Resources Canada, Geobase®, Nation Topographic Database, AREVA Resources Canada Inc.*

FIGURE 1.0-3
BONG AND GRANITE MAIN AREA COMPONENTS

SPILL CONTIGENCY PLAN
APPENDIX III

Kiggavik Project

AREVA

AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5

AREVA Resources Canada Inc.

Kiggavik Project, Nunavut

RADIATION PROTECTION PLAN

June 2012, Version 6 Revision 0

REQUIRED USERS

Required and other users are responsible for using the current version of the Radiation Protection Plan as posted on Q:\KS_Feasibility. Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
01	00	March 2007	Original submission
02	00	October 2007	Update to reflect changes in field activities/capabilities and goals of continual improvement
03	00	August 2008	Update to reflect changes in field activities/capabilities and goals of continual improvement
04	00	January 2009	Update to reflect changes in field activities/capabilities and goals of continual improvement
05	00	January 2010	Update to reflect changes in field activities/capabilities and goals of continual improvement
05	01	May 2011	Updated to reflect changes in personnel position titles.
06	00	June 2012	Updated to reflect changes in personnel titles and positions. Grammatical corrections.

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Environment and Radiation Protection Supervisor

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

TABLE OF CONTENTS

1 INTRODUCTION

This Radiation Protection Plan will be in effect for the duration of the Kiggavik Project located about 80 km west of Baker Lake:

- West Boundary 97° 57' 50.4" W Longitude;
- East Boundary 97° 20' 56.4" W Longitude;
- North Boundary 64° 39' 28.8" N Latitude; and,
- South Boundary 64º 17' 02.4" N Latitude.

1.1 Purpose and Scope

The Radiation Protection Program is designed to meet the requirements of the applicable Nunavut Occupational Health and Safety Regulations, Mineral Exploration Guidelines for Saskatchewan, the Canadian Nuclear Safety Commission (CNSC) Regulations (although current activities are not regulated by the CNSC) and the AREVA Resources Canada Inc. (ARC) Integrated Quality System Manual (IQMS). The program elements include:

Administrative Elements

- Program documentation
- Training
- Designation of Occupational Workers
- Dose limits and dose levels
- Obligations of Occupational Workers
- Pregnant Occupational Workers

Program Elements

- ALARA
- Radiological monitoring
- Dosimetry monitoring
- Management of radioactive materials
- Shipping of radioactive materials
- Site abandonment and restoration
- Emergency response

1.2 Revision to Manual

The Kiggavik Radiation Protection Plan is reviewed on an annual basis and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this manual.

1.3 Responsibilities

The Senior Project Geologist is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Environment and Radiation Protection (ERP) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 ADMINISTRATIVE ELEMENTS

2.1 Program Documentation

The Radiation Protection Program is comprised of a series of key documents combined in the Radiation Protection Procedures Manual (RPPM). These include Routine Radiological Monitoring Schedule, and Shipping Radioactive Material.

The Radiation Protection Program includes comprehensive work instructions for worker dosimetry, radiological monitoring and the safe handling of radioactive materials.

To ensure occupational exposures are managed in accordance with the As Low As Reasonable Achievable (ALARA) principle, radiological parameters are monitored against defined Action and Administrative levels. The Action and Administrative levels define values of radiological parameters above which intervention may be required and the corresponding mitigative measures to be followed.

2.2 Training

ARC provides necessary training to all its employees and contractors to ensure worker safety and protection of the environment during exploration activities. The training programs provided are designed to meet the requirements of the CNSC *Uranium Mines and Mills Regulations,*, Workers' Safety Compensation Commission (WSCC) *ISO 14001:2004 and OHSAS 18001:2007.*

All new employees, including contractors, receive appropriate radiation protection training prior to beginning work. This includes instruction on the origins of ionizing radiation, the types of radiation, health risks, the principles of radiation safety, protection and regulatory compliance. Training also includes the safe handling, management and disposition of radioactive materials such as drill muds, cuttings, and radioactive core. Training may be in the form of a PowerPoint presentation or interactive display.

All visitors at the Kiggavik site for more than 72 hours, or who will be left without an escort will receive radiation protection training. Visitors who have not received training must be escorted on site at all times.

Personnel supervising the shipment of radioactive materials must possess a valid TDG certificate in accordance with Transport Canada Transportation of Dangerous Goods Regulations. If radioactive materials are to be transported by aircraft, TDG training is to include the necessary aviation components for Class 7 materials. If contractors have their own training program they must submit their documentation. Support personnel providing assistance during

the preparation and shipment of radioactive material do not require TDG training as long as they are working under the direct supervision of trained individuals.

ARC field personnel and contractors establishing temporary work camps and/or handle fuel, lubricants and radioactive material require spill response training. If the contractors have their own training program they must submit evidence of the training program as per *EXP-820, Training, Awareness and Competence*. Training for ARC employees is provided in accordance with the *Spill Contingency Plan*. Contractors are provided a copy of said plan. If the contractors do not have an acceptable training program in place, AREVA will supply the training material and/or provide the training as required.

2.3 Designation of Occupational Workers

An Occupational Worker is defined as a person with a reasonable probability of receiving an occupational dose of radiation that is greater than 1 milliSievert per year (1 mSv/y), the prescribed limit for the general public.

An Occupational Worker by definition is equivalent to a Nuclear Energy Worker under the Canadian Nuclear Safety Act.

2.4 Dose Limits and Dose Levels

Occupational Workers are informed of the risks associated with radiation to which they may be exposed in the course of their work, and the applicable dose limits, during radiation protection training. Occupational Workers are limited to a maximum annual effective dose of 50 mSv in a one year dosimetry period, however must not exceed 100 mSv in a five year dosimetry period. A pregnant Occupational Worker is limited to 4 mSv for the balance of the pregnancy, once notification has been made to the employer. In the event of an emergency and the consequent immediate and urgent remedial work, the effective dose shall not exceed 500 mSv. The relaxation of normal dose limits in emergency situations does not apply to pregnant workers.

Occupational Workers are informed of their radiation dose levels in writing.

2.5 Obligations of Occupational Workers

Occupational Workers are obliged to provide information required to identify them to the National Dose Registry (i.e. given name, surname, previous surname, SIN, sex, date and province and country of birth) and release their dose histories for the current one and five year dosimetry periods. The purpose of this information is described to the Occupational Workers during radiation protection training. Occupational Workers are obliged to provide written

acknowledgement that they have received information regarding the risks associated with exposure to radiation and dose limits.

2.6 Pregnant Occupational Workers

Occupational Workers are informed during training of the risks associated with radiation to which the worker may be exposed in the course of their work, including the risks associated with the exposure of embryos and fetuses to radiation. Female Occupational Workers are informed of their obligation to inform their employer, in writing, when they become pregnant and are informed of the applicable effective dose limit of 4 mSv for the balance of the pregnancy.

3 PROGRAM ELEMENTS

3.1 ALARA

Radiation protection practice has its foundation in the ALARA principle, As Low As Reasonably Achievable. The commitment to maintain worker doses ALARA is established as a policy within ARC's Quality Management System Manual (QMS). This policy is established by senior management and is approved by the President and Chief Executive Officer. This Plan and the Radiation Protection Procedures all follow the ALARA principle.

3.2 Radiological Monitoring

Routine radiological monitoring consists of dosimetry monitoring and contamination control.

Dosimetry monitoring is conducted to determine and document worker exposures to radiological components which include gamma radiation, radon progeny (RnP) and long-lived radioactive dusts (LLRD).

Contamination control measures are in place to minimize the spread of radioactive materials into unintended locations.

Radiological monitoring is conducted in accordance with the *EXP-740, Routine Radiological Monitoring Schedule* and associated work instructions.

3.3 Management of Radioactive Materials

3.3.1 Radioisotopes

Nuclear materials and radiation devices are used for exploration and instrument calibration. The possession, use, storage, and disposal of nuclear materials and radiation devices are carried out in strict accordance with CNSC *Nuclear Substances and Radiation Devices Regulations* and licence conditions.

3.3.2 Core Storage

Nunavut currently lacks regulations or guidelines for uranium mineral exploration or mineral industry environmental protection. In the absence of territorial regulations, the storage and disposal of radioactive materials arising from project activities are be carried out in accordance with Saskatchewan *Mineral Industry Environmental Protection Regulations, 1996*. ARC's

Saskatchewan uranium drilling activities have been ongoing for the last 35 years and continue to this day.

Permanent and long-term storage areas of radioactive material must be located at least 30 m from the main camp and at least 100 m from the high water mark of all water bodies.

Gamma radiation dose rates at 1 m from the surface of a storage area should be reduced to 1 µSv/h and in no instances exceed 2.5 µSv/h.

Permanent on-site radioactive core storage areas must be appropriately labelled with radiation warning sign and fenced.

3.3.3 Disposition of Drill Cuttings

During drilling activities, drill mud solids or cuttings in non-mineralized zones are deposited on the ground, in a selected natural low-lying depression. This natural depression must be located, at a minimum, 30 m beyond the ordinary high level water mark of any nearby water bodies, and where direct flow into the water body is not possible. A radiological survey is conducted before and after drilling to ensure elevated readings are not occurring. The depression is then backfilled and contoured, as much as possible, back to natural pre-existing conditions.

When mineralized core is intercepted, drill mud and cuttings are collected in appropriate containers and categorized as radioactive through appropriate radiation measurements.

Drill mud or cuttings with uranium content greater than 0.05% will be collected and stored at the radioactive storage compound with an appropriate containment system in place. Down hole disposal of cuttings is not often practical at Kiggavik. Drill holes are sealed by cementing/grouting the upper 30m of bedrock or the entire depth of the hole, depending on the presence of mineralization or otherwise approved of by the appropriate regulatory agencies in writing.

3.3.4 Spills

The uncontrolled or accidental release of any radioactive materials including drill mud solids and cuttings is considered a spill. Spills of radioactive material are appropriately reported and responded to in accordance with the Spill Contingency Plan.

In the event of a spill, radioactive materials are collected and necessary site remediation undertaken to meet the site abandonment criteria of less than 1 µSv/h above background at a height of 1 m. To the greatest extent possible, all spill affected areas will be decontaminated.

Material collected during the clean-up is stored in appropriate containers in the radioactive storage compound, for future handling.

3.4 Shipping of Radioactive Materials

Shipping and receiving radioactive material is carried out in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations* and the Transport Canada *Transportation of Dangerous Goods Regulations*.

3.5 Site Abandonment and Restoration

Site abandonment and restoration is carried out in accordance with the Abandonment and Restoration Plan.

Gamma radiation surveys are conducted at each site prior to drilling and prior to final abandonment. Contaminated soil or cuttings are collected in appropriate containers and stored in the radioactive storage compound for future handling, which may include transfer to an operating mine site. Drill sites are cleaned to ensure that the gamma dose rate at a height of 1 m from surface is less than 1 μSv/h above ambient background.

Materials and equipment leaving the Kiggavik site are monitored for contamination in accordance with the *EXP-740, Routine Radiological Monitoring Schedule.* Materials or equipment that cannot be decontaminated to meet unrestricted release criteria are either stored in the radioactive storage compound or shipped to a licensed facility such as the McClean Lake Operation in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations* and the Transport Canada *Transportation of Dangerous Goods Regulations*.

3.6 Emergency Response

Emergencies could include such incidents as spills, lost or damaged radioactive sources and transportation incidents.

Emergencies involving radioactive materials are responded to in accordance with the Emergency Response Manual. When responding to an incident involving radioactive material, emphasis is always placed on minimizing exposures.

In the event of an incident involving radioactive material, immediate actions are taken to minimize worker exposures. In the event of any incident involving radioactive material, the Environment and Radiation Protection Supervisor or designate is notified immediately.

In accordance with the Spill Contingency Plan, in the event of a spill involving radioactive material, actions are taken to contain the spill, limit the spread of contamination and to control access to the spill area. Appropriate radiological and dosimetry monitoring is performed to ensure worker doses remain ALARA. Mitigation measures to be followed include recovery of radioactive material and decontamination of affected areas.

In the event a radiation source is damaged, it is removed from service immediately and stored in a secure location. The removal of a damaged source from site is coordinated with the Environment and Radiation Protection Supervisor, Safety and Radiation Coordinator and the McClean Lake Operation Radiation Protection Group.

If at anytime it appears that a radiation source has been lost, misplaced or stolen, the Project Geologist or designate, the Vice President, Exploration, the McClean Lake Radiation Protection Group, and the Safety and Radiation Coordinator are notified immediately.

Emergency response is co-ordinated through the corporate office in Saskatoon. The ARC *Emergency Response Assistance Plan* details the organization, responsibilities, procedures and mitigative measures to be followed in the event of an offsite emergency involving the transport of radioactive material. Environmental emergencies are considered secondary to the safety of personnel.

All incidents involving radioactive materials and devices are reported to the Vice President, Exploration within 24 hours and appropriately investigated.

In the event of any incident involving a radiation source, federal and territorial agencies are notified in accordance with applicable regulations.

4 REFERENCES

EXP-740, Routine Radiological Monitoring Schedule

AREVA Resources Canada Inc. Integrated Quality System Manual

Spill Contingency Plan

Emergency Response Manual

ARC Emergency Response Assistance Plan

Canadian Nuclear Safety Commission (CNSC) *Nuclear Substances and Radiation Devices Regulations*

CNSC Uranium Mines and Mills Regulations

CNSC Packaging and Transport of Nuclear Substances Regulations

Transport Canada *Transportation of Dangerous Goods Regulations*

Saskatchewan *Mineral Industry Environmental Protection Regulations, 1996*

Mineral Exploration Guidelines for Saskatchewan. 2007. Government of Saskatchewan (November 2007)

Canadian Nuclear Safety Act

Nunavut Occupational Health and Safety Regulations

AREVA Resources Canada Inc.

Kiggavik Project, Nunavut

WASTE MANAGEMENT PLAN

May 2012 – Version 5, Revision 1

REQUIRED USERS

Required and other users are responsible for using the current version of the Waste Management Plan as posted on Q:\Exploration\IMS. Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
01	00	March 2007	Original submission
02	00	October 2007	Update to reflect changes in field activities/capabilities and goals of continual improvement
03	00	January 2009	Update to reflect changes in field activities/capabilities and goals of continual improvement
04	00	January 2010	Update to reflect changes in field activities/capabilities and goals of continual improvement
05	00	May 2011	Update to reflect changes in field activities/capabilities and goals of continual improvement
05	01	May 2012	Updated to reflect personnel changes

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Environment and Radiation Protection Supervisor

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

TABLE OF CONTENTS

LIST OF TABLES

1 INTRODUCTION

The AREVA Resources Canada Inc. (ARC) Waste Management Plan applies to the Kiggavik Project (Project) located about 80 km west of Baker Lake. ARC is committed to ensuring that all wastes generated by the Kiggavik Project are collected, stored, transported, and disposed of in a safe, efficient and compliant manner.

1.1 Purpose and Scope

The waste management plan principles are fulfilled by using proven strategies and applying modern technologies to ensure materials are used efficiently and disposed of in an environmentally conscious manner. General strategies include the following:

- The implementation of a waste manifesting system to enable waste identification and tracking.
- The most environmentally suitable materials, equipment, and products are used where practical.
- Procurement procedures consider product substitution for materials that are hazardous to handle, generate hazardous wastes, or create an environmental liability.
- All site personnel attend an orientation, which addresses waste management and handling of hazardous goods, prior to being exposed to the worksite. The site orientation for short-term visitors includes a waste management component.
- Proper sorting, disposal, storage and handling of all waste streams.

1.2 Revision to Manual

The Kiggavik Waste Management Plan is reviewed on an annual basis and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this manual.

1.3 Responsibilities

The Senior Project Geologist is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Environment and Radiation Protection (ERP) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 WASTE REDUCTION, REUSE, AND RECYCLING

2.1 Waste Reduction

Efforts to, wherever practical, reduce waste at source, for example:

- refillable pump bottles instead of aerosol cans;
- reduction of paper consumption by promoting the use of electronic mail, voice messaging, electronic transmittals, etc.;
- reduction of disposable cups and containers by encouraging use/re-use of refillable mugs for beverages; and,
- storage of bulk liquids in large containers and dispensing the liquids into smaller, refillable bottles and containers, instead of several smaller containers.

Means of reducing the volume of waste generated continue to be developed as the project progresses.

2.2 Waste Reuse

Waste is reused to the furthest practical extent. Examples of waste reuse include the use of cribbing from shipping of materials and equipment.

2.3 Waste Recycling

Waste is recycled where practical. Materials that may offer recycling opportunities in the future are investigated on an on-going basis during operations in an effort to reduce waste. For example, ARC may store materials such as tires, fluorescent lamp ballasts and other chemicals on-site for future shipping off-site for recycling.

3 WASTE SOURCES

The sources and types of wastes that are generated are presented in Table 3-1:

Table 3-1 Sources of Waste Generation

Source of Waste	Types of Waste
Chemical handling and storage operations	waste petroleum products, used chemicals
Sewage	biological sludge
Equipment maintenance	used batteries, engine oil, oil filters, tires, scrap metals, *etc*.
Building maintenance	used transformers, fluorescent lighting ballasts/tubes, glycol, construction scraps (wood, piping, carpets, *etc.)*
Domestic waste from: - camp and drill sites - admin offices - kitchen facilities	domestic garbage, food wastes, paper, cardboard
Inert waste from camp and drill sites	cement, sand, used materials, metals, pipe, glass, insulation etc.
Biological waste from medical facility	biological waste, needles, syringes, blood, human tissue, gauze pads
Drilling	Clean or radiologically contaminated drill cuttings

4 IDENTIFICATION, STRATEGY, AND DISPOSAL PLAN

Table 4-1 shows treatment strategies and disposal plans for wastes during the exploration program.

Table 4-1 Treatment Strategies and Disposal

Waste Type	Treatment Strategy	Disposal Plan
Petroleum based		
Used oil	recycle	Collect in bunged drums. Store in lined/bermed storage area. Ship off-site
Used hydraulic fluid	recycle	Collect in bunged drums. Store in lined/bermed area. Ship off-site
Oil filters	recycle/recover	Collect in ring lidded drums. Store in lined/bermed storage area. Store for shipment off-site.
Contaminated soils	Excavate	Store for shipment off-site or landfarming (upon approval)
Waste batteries	recycle	Drain (if required) and neutralize acid. Store for shipment off-site
Aerosol cans	reduce/recycle	Puncture and drain, if equipment is available or collect in ringed drums. Store for shipment off-site.
Paint	dispose off-site	Collect and store cans in drums for shipment off-site
Chemicals		
Glycol	recycle	Collect in bunged drums. Store for shipment off-site
Solvents	reduce/dispose off-site	Use non-toxic solvents where possible. Store in drums for shipment off-site
Domestic wastes		
Food	incinerate	Collect and store in designated containers. Incinerate daily.
Paper/cardboard	reuse/incinerate	Reuse where possible or incinerate
Plastics	Reuse/dispose off site	Reuse where possible
General camp wastes	incinerate	Sort to retrieve non-burnable. Incinerate.
Inert Bulk Wastes		
Buildings/bulk debris	reuse off-site/dispose off-site	Store for future shipment off-site
Wood	Incinerate, dispose	Sort wood, incinerate non-treated wood, ship treated wood off-site to approved disposal facility
Incinerator ash	Dispose off-site	Collect in drums for shipment off-site
Scrap metal	Dispose off-site	Store for shipment off-site
Organic Wastes		
Sewage sludge	Incinerate	Bag and incinerate solid waste from pacto toilets; liquid waste is directed with greywater
Biological wastes	Incinerate/dispose off-site	Store in special waste receptacles. Incinerate/ship off-site
Drill cuttings - clean		Disposed in a low lying area in the receiving environment
Drilling cuttings - radiologically contaminated		Collected at the drill site in totes and stored in the radioactive storage compound for future handling, or shipped to an existing mining operation if the current exploration project does not proceed to development

5 WASTE MANAGEMENT

5.1 Sorting

Waste must be sorted at the source before it can be disposed or transported to specific designated areas in order to prevent materials from being disposed of improperly. Measures that are implemented for sorting include, but are not be limited to, the following:

- Containers are available for the collection of burnable, non-burnable, and recyclable wastes, such as scrap metal, timber, unsalvageable equipment, etc. The contents of the containers are sorted and stored for future handling, which consists of incineration off-site disposal or recycling.
- Stored wastes are kept in a neat and tidy fashion and are transported off-site during the winter haul season in accordance with the Winter Road Plan.
- The waste manifest tracking will be updated upon removal of waste items from site.

5.2 Waste Storage

5.2.1 Containers

Containers used for storage of waste are selected based on physical and regulatory requirements prevention of wildlife attraction (i.e.: steel or heavy duty plastic containers with positive clamping lids) and transport requirements (helicopter, truck, forklift, etc.). All containers are properly labelled to identify only those wastes for which the containers are being used to collect.

5.2.2 Waste Storage-Areas

All waste(s) collected in drums that are susceptible to damage which may lead to a leak or spill are stored in lined/bermed areas (arctic berms) for future handling and removal from site. The lined/bermed areas (arctic berms) have been identified as the location in which used or generated hazardous materials are to be stored prior to off-site shipment.

5.2.3 Incinerator

An incinerator is used on a daily basis for the incineration of non-hazardous, combustible waste materials, which includes paper, food waste, sewage and non-treated wood. Incinerator ash is collected regularly (frequency depending on ash loading) in sealed, wildlife resistant containers and transported off-site for disposal.

5.3 Food Waste Handling

Food wastes are collected from the camp, drills and other facilities as required, and immediately placed in plastic bags. The bagged waste is then transported directly to the incinerator which is

located within 50 m of the kitchen. Typically, food wastes are incinerated daily to avoid potential wildlife attraction. Food wastes are not stored outside the incinerator area.

To prevent wildlife attraction, food, beverages and their containers are not disposed of outdoors. Designated snack and break areas for personnel are provided to prevent food and wastes from being generated uncontrollably around the site.

5.4 Non-Food Waste Handling

5.4.1 Sewage

When pacto-toilets are used, the sewage removed from the washrooms is collected in bags and immediately incinerated.

Liquid sewage from the urinals is currently mixed with the camp grey water for discharge into a designated low-lying area, which is at minimum 30 m south of camp.

5.4.2 Chemicals

Chemicals are collected in appropriate containers, and stored in a lined/bermed area for future shipment off site for disposal or recycling at an approved facility.

5.4.3 Waste Oil

Waste oil is collected in bunged drums and stored in the lined/bermed area for future shipment off-site for handling at an approved facility.

5.4.4 Domestic Wastes

Non-toxic, non-food solid wastes is sorted into recyclable, reusable, combustible, and non-combustible categories. Combustible items are burned in the incinerator, while non-combustible items are stored until they are shipped off-site for recycling.

Aerosol cans are punctured and drained prior to being shipped off-site.

Toxic materials are to be stored in sealed, steel or plastic drums in a lined/bermed area and shipped off-site for proper disposal.

5.4.5 Inert Bulk Wastes

Inert bulk wastes that cannot be readily recycled or reused, such as chemically treated wood, general debris, incinerator ash, tires, etc. are stored and appropriately labelled prior to shipment off-site to an approved facility.

5.4.6 Hazardous Wastes

All other hazardous, non-combustible waste and contaminated materials not identified above are temporarily stored in appropriate containers and shipped off-site for disposal or recycling.

During normal operations, hazardous materials are stored in other various locations associated with their intended use to minimize site transport and handling requirements. These materials and locations are as follows:

- oils and greases are stored in drums, pails, and bottles in the maintenance shop or drill laydown area
- batteries of all types will be stored in a storage area;
- ethylene glycol is stored in drums in the lined/bermed area

5.4.7 Drill Cuttings

When drilling in non-mineralized zones, drill mud solids or cuttings are deposited in designated low-lying areas. When mineralized core, greater than 0.05% uranium, is intercepted, all drill mud and cuttings are disposed of down hole where possible or collected in appropriate containers and stored in the radioactive storage area. This is in accordance with *Work Instruction EXP-740-05, Management and Disposition of Radioactive Drill Cuttings* and the Abandonment and Restoration Plan.

6 REFERENCES

Winter Road Plan

Abandonment and Restoration Plan

Work Instruction *EXP-740-05, Management and Disposition of Radioactive Drill Cuttings*

AREVA Resources Canada Inc.

KIGGAVIK PROJECT, NUNAVUT

WILDLIFE MITIGATION AND MONITORING PLAN

June 2012 – Version 5, Revision 1

REQUIRED USERS

Required and other users are responsible for using the current version of the Wildlife Mitigation and Monitoring Plan as posted on Q:\Exploration\IMS. Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
01	0	March 2007	Original submission
02	0	January 2008	Updated to reflect changes in field activities/capabilities and areas of continual improvement
02	01	May 2008	Updated to reflect program changes initiated by new consulting biologist and to integrate comments received by Nunavut and NWT biologists
03	0	January 2009	Updated to reflect opportunities for improvement
04	0	January 2010	Updated to reflect opportunities for improvement
05	0	April 2011	Updated to reflect lessons learned throughout the 2010 field season. These changes include an appendix which outlines the appropriate responses to a variety of scenarios to ensure appropriate mitigative actions are carried out in a timely and effective manner.
05	01	May 2012	Updated to reflect change in personnel titles

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Environment and Radiation Protection Supervisor

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

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TABLE OF CONTENTS

LIST OF APPENDICES

1 INTRODUCTION

The Wildlife Mitigation and Monitoring Plan (Plan) described herein has been developed by AREVA Resources Canada Inc. (ARC) for the Kiggavik Project (Project) located approximately 80 km west of Baker Lake, Nunavut. The Plan is implemented during the field season to monitor and reduce Project impacts on wildlife, particularly caribou. The Plan serves as a work instructional and internal best management practice and encompasses activities in Nunavut, including continued exploration and environmental baseline programs.

All ARC Kiggavik staff, contractors, subcontractors, helicopter contractors, and Independent Wildlife Monitors, have the responsibility to be familiar with and to follow this Plan. Implementation and enforcement is the responsibility of the Environment and Radiation Protection (ERP) Supervisor or designate. Current field worksites include locations of:

- Camp Activities (including fuel caching)
- Drilling Operations
- Airborne Geophysics
- Ground Geophysics and Exploration Activities
- Environmental Baseline Work and
- Environmental Monitoring

The Plan is reviewed and updated annually in consultation with a biologist knowledgeable in barren ground caribou issues to reflect lessons learned through ARC experience and the experience of other development projects as well as feedback and recommendations from regulators and community members.

The current Plan has evolved with lessons learned during the previous field seasons; community input; and regulatory commitments. ARC is working closely with the Government of Nunavut Department of Environment (GN-DoE) to investigate options for collecting meaningful caribou population data using low invasive methodologies.

2 MONITORING PLAN

2.1 Independent Wildlife Monitoring

ARC will employ an Independent Wildlife Monitor(s) to:

- Verify that this plan is carried out.
- Report regarding wildlife issues at Kiggavik outside of ARC.
- Provide safety assistance regarding wildlife issues.

The Independent Wildlife Monitor must become familiar with Kiggavik's Procedure for Wildlife Monitoring and Work Instruction *Independent Wildlife Monitor Scope of Work* for proper implementation of the Plan which will be provided by ARC.

2.2 Baseline Data to Support an Environmental Assessment

Wildlife survey data collected to support the development of an Environmental Impact Statement (EIS) may be used to support site monitoring and help inform appropriate mitigation actions as required. The environmental consultants communicate regularly with the ERP Supervisor or designate to ensure important wildlife observations are recorded and communicated to appropriate personnel at site.

2.3 Aerial Observations

Wildlife observations during daily transportation of field staff and contractors are recorded, and provide information about the presence of caribou. Please refer to section 3.4 Flight Specific Mitigation for the required altitudes of the above mentioned flights.

2.4 Wildlife Logs

ARC has provided *Incidental Wildlife Sightings Form* for all site personnel, contractors, and visitors to complete following the observation of any wildlife. Instructions regarding this form are provided during orientation. The Independent Wildlife Monitor utilizes the *Wildlife Monitoring Data Form* to record information obtained in the field. All wildlife information is transcribed to an electronic file and a summary is included in the monthly wildlife reports.

2.5 Caribou Radio-Collaring Data

The study area will be monitored for approaching caribou with the use of satellite collar information provided by caribou biologists with the Governments of Nunavut and the Northwest Territories**.**

3 MITIGATION AND PROTECTION MEASURES

Mitigation and protection measures are heavily based on compliance with permit/lease terms and conditions. Additional ARC commitments were adopted from recommendations from the Government of Nunavut, GN-DoE, Environment Canada (EC), Beverly and Qamanirjuaq Caribou Management Board (BQCMB) and ARC-led commitments. ARC will implement the following mitigation and protection measures for caribou, and other wildlife that are seasonal or annual residents of the Project area.

3.1 General Protection Measures

- Site activities (camp layout, drilling) will be performed in a manner that limits the size of the Project footprint.

- Staff will be required to follow the procedures in the "Safety in Bear Country" manual and all man-bear interactions will be reported to the Baker Lake Conservation Officer.

- If there is a disturbance to caribou or if an incident occurs between a grizzly bear, wolverine, wolf, or fox and the field staff, or a Supervisor's Investigation Report will be completed. An incident is defined as a disturbance to caribou, damage to camp facilities caused by wildlife, continued persistence of a carnivore(s) within the camp or work site, and/or interactions between humans and wildlife that lead to harm to either. In the case of a wildlife incident notify the Baker Lake Conservation Officer.

- An ARC representative will contact the Baker Lake Conservation Officer for appropriate protocols and actions if a need for deterrents or other wildlife management techniques are identified.

- Use of "good house keeping" practices to maintain a garbage-free camp and exploration area, should limit the attraction of wildlife to the Project site. All non-hazardous combustible garbage is burned in an incinerator (see Waste Management Plan). Non-combustible waste and hazardous materials are stored in a designated area for future shipment to an approved facility.

- ARC educates and enforces "no feeding or harassment of wildlife" and the appropriate response to animal encounters, specifically carnivores and muskoxen is communicated.

- The use of firearms is strictly controlled. The Project Geologist or designate must approve any firearm coming on site. The only allowable use of firearms is for dangerous animal deterrence measures (e.g. firearms, bear bangers, bear spray, cracker shells and rubber bullets), and for safety kills to protect human life should a situation arise when other measures have failed. The Independent Wildlife Monitor is permitted to carry a firearm. Refer to *GSP Section 9.03 Firearms and Offensive Weapons* regarding storage and use of firearms.

- Hunting and trapping by ARC employees and contractors is prohibited on the Kiggavik lease.

- ARC employees and contractors must obtain a Sport Fishing Licence, and provide a copy to the ERP Supervisor or designate before commencing on a fishing trip leaving from site.

- Wildlife has the "right-of-way" and will not be blocked or deterred from moving through the Project area.

- Materials, chemicals, and equipment will be removed from the drill sites and camp area at completion of the project as described in the Abandonment and Restoration Plan. The intent is to reclaim the area as close as possible to the natural state.

- Chemicals are stored in double-walled containers or in secondary containment. Diesel fuel, gasoline, and aviation fuel is contained within arctic berms or double-walled storage tanks (see Spill Contingency Plan). In the event of a spill, the Spill Contingency Plan will be implemented immediately. Used chemicals are stored for transportation off site for proper handling.

- Refer to the Noise Abatement Plan for measures taken to control noise.

3.2 Raptor (and Other Migratory Bird) Protection Measures

ARC has implemented the following protection measures to mitigate potential impacts to raptors and other migratory birds.

- ARC will avoid disturbing known raptor nests from April 15th to September 1st by maintaining a 1.5 km buffer when in transit by aircraft and will avoid approaching known nests closely while on foot. Limited disturbance (e.g. raptor nest monitoring) within the aircraft buffer may occur infrequently prior to September in order to obtain necessary baseline data. The consulting biologist will be informed of all other potential disturbances in order to implement potential protection and mitigation measures, and to initiate monitoring efforts to determine vulnerability and susceptibility to the disturbance. Efforts to monitor disturbance response will help to inform future activities.

- If a nest site is established on a man-made structure and eggs are present, the nest will be avoided as much as possible and monitored for nest success.

- Where land disturbance activities occur during the breeding period for land birds (May 30th to July 31st) a bird nest survey will be conducted prior to the land disturbance following *Work Instruction KIG-722-02, Active Bird Nest Identification and Monitoring*. All nests will be recorded and efforts to create appropriate buffers (dependant on species tolerance and protection level) around migratory birds and species at risk will be made. Nests will be monitored for hatch or termination.

3.3 Caribou Protection Measures

The calving grounds for the Beverly and Qamanirjuaq herds are approximately 70 km and 200 km from the exploration areas, respectively. ARC does not conduct any activity within the designated Caribou Protection Areas or within the larger known Caribou Calving Grounds. The distance between the Kiggavik camp and the nearest known caribou water crossings is 25 km. Figure 3.3-1 shows the

caribou crossings and calving areas in relation to the Kiggavik Project Site. ARC follows the DIAND Caribou Protection Measures (AANDC, 2010) as well as additional caribou protection and mitigation commitments.

- No camp construction, caching of fuel, or blasting will occur within 10 km of a designated and/or recognized caribou crossing during periods of migration between May 15 and September 1. No diamond drilling activity will occur within 5 kilometres of any designated and/or recognized caribou crossing during periods of migration between May 15 and September 1. Operation of ground, air or water-based mobile equipment within 10 km of a caribou crossing is anticipated to happen infrequently and will only occur in the absence of caribou concentrations. Ground-based monitoring and/or aerial reconnaissance flights will be used to monitor caribou presence as required and appropriate prior to and during operations of mobile equipment (AANDC, 2010).

- Snowmobile and ATV use will be suspended if cows and calves are within 2 km of activities.

- If a collared caribou is identified as approaching site activities the ERP Supervisor or designate may determine what the collar represents by communicating with the GN or GNWT, with environmental consultants, and exploration companies within the area. The Manager of Nunavut Affairs will be notified and if required, verification will occur through an aerial reconnaissance survey.

- In the event that caribou cows calve outside the designated Caribou Protection Areas, ARC will suspend operations within 10km[1] of any area occupied by cows and calves between May 15 and July 15 (AANDC, 2010). Water circulation in the drills will continue to avoid the rods from freezing in the hole. Monitoring activities and visuals from the drill area will be used to identify when caribou are within 10 km of drilling activities. Through ground based monitoring, the Independent Wildlife Monitor will determine when caribou cows and calves are outside the 10 km buffer, and report the information to the ERP Supervisor or designate. Activities can resume when the caribou are outside the 10 km buffer following confirmation by the ERP Supervisor. If a concentration of caribou remains within 10 km of drilling operations for more than 2 days the ERP Supervisor or designate will contact the Conservation Officer in Baker Lake and the consulting biologist to determine the next appropriate course of action.

- During June and July (to avoid injuries to caribou and humans), drilling activities will be suspended if concentrations of caribou (50 or more) approach within 2 km[2] of drilling operations (NIRB, 2007a and GN-DoE, 2008). Water circulation within the drill will continue to avoid the rods from freezing in the hole. Monitoring activities and visuals from the drill area will be used to identify when caribou

[1] The 10 km calving period buffer originated from comments by the BQCMB and GNDOE (BQCMB, 2007, GN, 2007, GN 2008)

[2] With respect to the recommendation for suspending activities when caribou are within 10 km of exploration activities (GN-DoE 2007, GN-DoE 2008), ARC offers the following information and approach. Studies of woodland caribou have demonstrated avoidance of up to 1 km for well sites and 250 m for roads and seismic lines (Dyer et al. 2001). Data from the Ekati Diamond Mine suggests that the instantaneous negative response (alert, stop feeding) of barren-ground caribou to stressors (e.g., truck traffic) increases within 1 km of the source (BHPB 2004). Behaviour data also demonstrated that the amount of time spent feeding by females with calves was reduced when animals were within 5 km of Ekati mine footprint (BHPB 2004). The size and level of activity of the Kiggavik-Sissons project is much less than an operating diamond mine or road.

are within 2 km of drilling activities. Through ground based monitoring, the Independent Wildlife Monitor will determine when caribou are outside the 2 km buffer, and report the information to the ERP Supervisor or designate. Activities can resume when caribou are outside the 2 km buffer following confirmation by the ERP Supervisor or designate. If a concentration of caribou remains within 2 km of drilling operations for more than 2 days the ERP Supervisor will contact the Conservation Officer in Baker Lake and the consulting biologist to determine the next appropriate course of action.

- Caribou will have the “right-of-way”, and will not be blocked or deterred from moving through the Project area. All activities that may interfere with migration will cease during migration.
- ARC will forward any direction from GN-DoE or KIA regarding caribou monitoring to NIRB (NIRB 2007).
- Refer to 3.4 Flight Specific Mitigation for altitudes over concentrations of caribou 50 or more within close proximity to one another.

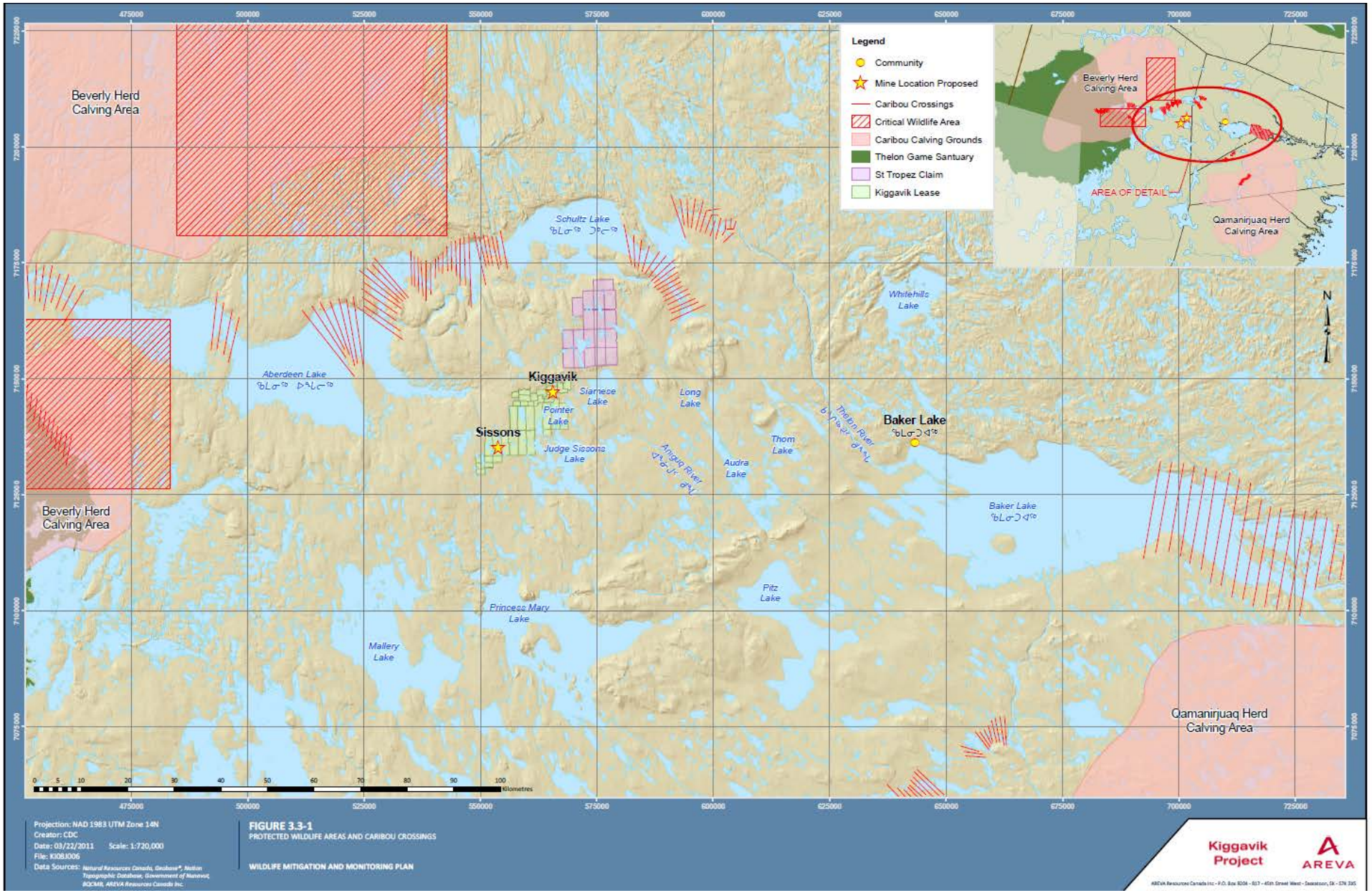

Figure 3.3-1 Beverly and Qamanirjuaq Calving Areas and Caribou Crossings in Relation to Kiggavik Project Site

3.4 Flight Specific Mitigation

ARC will make efforts to avoid wildlife during flights and to avoid low-level flying to minimize impact of helicopter and airplane noise and presence. Although required flight altitudes are outlined below, some low-level flights are occasionally required for geological/environmental surveys, slinging operations, and during periods of poor weather. Geological or environmental surveys that will be flown below desired altitude must be pre-approved by the ERP Supervisor or designate. Unless otherwise approved by the ERP Supervisor or designate, personnel must adhere to the minimum flight altitudes listed below. If flying at lower altitudes is required, the ERP Supervisor must be notified and reasons documented. Any special requirements including the necessity for high level reconnaissance surveys will be determined by the ERP supervisor or designate.

- For long-range transportation flights (>25 km), aircrafts are required to fly at a minimum of 610 m (2000 ft) above ground level.
- For shorter transportation flights (between 4-25 km)(e.g. movement of staff and equipment between camp and deposits within the Kiggavik lease), the normal practice is to fly all aircraft at a minimum of 300 m (1000 ft) above ground level.
- Unless caribou are present there are no altitude restrictions for flights less than 4 km.
- In the presence of 50 or more caribou best practice is to avoid the caribou by a minimum distance of 610 m [1] above or around the herd.
- Taking-off or landing of aircraft does not occur if 50 or more caribou are within 1 km of the landing area, except where safety is at risk (NIRB, 2007).
- From April 15th to September 1st, ARC will not fly within 1.5 km of nesting raptors when in air transit and will avoid disturbance in poor weather. Efforts to protect raptors during baseline data collection are given in Section 3.2.
- Aircraft pilots are instructed not to fly over the Beverly calving grounds 70 km northwest of the Project area (Figure 3.3-1).
- A requirement of the projects main helicopter contractor is to provide altitude reports for all flights. Track logs of helicopter flights are maintained.

Protection measures specific to low-level airborne surveys are given in the following section.

[1] For helicopter safety, the normal practice is to fly 2500 ft westbound for long flights such as Baker Lake to the Kiggavik Camp, and 3500 ft eastbound from the Kiggavik Camp to Baker Lake using the altimeter setting of 29.92". This is in accordance with Canadian Aviation Regulations (CARS 602.34 and CARS 602.36)

Table 3.4-1 Required activities and their applicable frequencies and flying altitudes

Activity	Flying Altitude (above ground)[1]
Regular Long Distance Flights >25 km	≥610 m
Short Distance Flights between 4 and 25 km	≥300 m
Aerial Reconnaissance Surveys	≥300 m
Airborne Geophysical Surveys	≥120 m (as required by the survey protocol)
Flights in the vicinity of ≥ 50 caribou	≥610 m (horizontal separation if vertical is not possible)

3.5 Mitigation Specific to Aerial and Ground Geophysical Surveys

3.5.1 Survey Rationale

Aerial

Airborne geophysical techniques are used extensively in exploration to identify physical variations in the underlying geology which can be then used as a means of defining areas of interest. Airborne geophysical surveys are normally conducted at least once in a cycle of exploration activity. Different methods are employed such as Electromagnetics (EM), Gravity Gradiometry, Magnetics and Radiometrics may be conducted in different years if required. Flying altitudes and line spacing's are the main factors that govern the resolution of the survey. To map the targets both a tight line spacing (~150 m) and a low altitude of (50-200 m) following the topography is required.

Airborne geophysical surveys can gain access to remote areas quickly and reduce exploration time. In addition, where environmental issues may limit the amount of exploration possible with ground activities, airborne surveys offers a solution to these issues. If flying over concentrations of caribou is avoided, then this technique is a non-invasive passive technology, an environmentally friendly alternative that will help focus future ground-based activities while limiting or reducing impacts to the environment.

Ground Geophysical Surveys

Ground geophysical surveys are generally the second step in the geophysical exploration. Mainly used to refine the areas of interest that result from the airborne surveys, they employ the same kind of techniques such as DC Resistivity, EM, Gravity, Magnetics, and Radiometrics. They are used to better understand the underlying geology with more detail and to help geologists to define their drill targets.

Ground geophysical surveys have a lower production rate compared to airborne surveys because they are generally realized by men on the ground but the accuracy is better. Techniques have almost no

[1] Normally the altitude above ground is estimated using the aircraft altimeter set to 29.92" of mercury and correcting for the ground elevation along the track. This causes uncertainties due to estimating the ground elevation and the difference between the barametric pressure at the time of the flight and standard pressure of 29.92".

effects on the environment (walking on the ground) and instruments can be quickly removed from the field if caribou are getting too close to the survey area.

3.5.2 Survey Specifications

Airborne Geophysical Survey Specifications

The chosen method is to mount survey instrumentation in a suitable aircraft. Instrumentation includes among others the data acquisition system (which records full tensor gravity gradiometry, triaxial magnetic gradiometry etc if any), digital video, and a complete digital terrain model from an inertially referenced laser (Lidar) altimeter system or a radar system. Specific requirements to complete a survey could be as follows:

- Nominal Flying Height: 120 - 200 m
- Flying Mode: Modified Drape
- Line Spacing: 150 m
- Tie Line Spacing: 750 m
- Ground Cover Restriction: Results are much more precise without snow cover
- Survey time: Dependant on weather conditions and the presence of caribou within the survey area)

Ground Geophysical Survey Specifications

The chosen method is to deploy in the field the adequate technique to realize, if any, a mapping of the apparent resistivity or gravity, to locate anomalous radioactivity, to define magnetic structures and to characterize targets in depth.

The specific requirements to complete a mapping survey could be as follows:

- Line Spacing: 150 m
- Number of lines: 20
- Length of lines: 2000m
- Surface covered: 6 km²
- Ground Cover Restriction: Results are much more precise without snow cover and frozen ground
- Survey time: Dependant surface cover, contractor's crew size, quantity of equipment used, weather conditions and the presence of caribou within the survey areas

3.5.3 Protection Measures

The following protection measures apply to airborne and ground geophysical surveys. The intent of these protection measures is to help ensure surveys are only conducted when caribou disturbance can be minimized.

- The preferred window for conducting geophysical surveys is in June after the northern migration, and efforts will be made to avoid the migration and post calving periods from July 15 to 31.

- The ERP Supervisor or designate is notified of the requested survey area and duration to confirm compliance with the Plan.
- A reconnaissance flight is flown at an altitude of 300 m over the initial line of the proposed area to determine the presence of caribou. If the ceiling is lower than the 300 m but at an altitude that permits safe flying, the reconnaissance flight will be flown at the maximum altitude possible.

Airborne Geophysical Surveys

- If a concentration of caribou (50 or more individuals in close proximity to one another) are within the survey area the aircraft will relocate to another part of the survey block and repeat the reconnaissance flight or the survey will be postponed until the caribou are at a distance of 2 km from the survey area.
- If caribou calves are present in the survey area between May 15th and July 15th the survey will be postponed until either the calves are gone or the survey can be conducted outside of this time period.
- If concentrations of caribou are not observed within the survey route, then the survey proceeds at the approved altitude
- A continuous watch is kept for caribou during the survey. If concentrations of caribou are observed in the survey area during the course of the work, the survey is aborted and another part of the block is selected.
- The contractor must notify the ERP Supervisor or designate of such caribou encounters and provide information pertaining to the location, time, numbers, etc of caribou.

Ground Geophysical Surveys

- Reconnaissance flights are flown daily during the survey to confirm the absence of caribou herds in proximity to the survey area.
- If 50 or more caribou or cows with calves between May 15th and July 15st are not within 10 km of the study area, or are not expected to be within the study area during the survey, the survey can be conducted. In the event the caribou are within 10 km, the geophysical survey will be postponed.
- For concentrations of caribou the ERP Supervisor or designate along with the Consulting Biologist, will determine an adequate distance at which the geophysical wire is to be retrieved. The time required to retrieve wire and the speed in which the caribou are migrating will be considered. This distance will be determined prior to conducting each new survey.
- If 50 or more caribou (in close proximity to one another) approach the survey area, within the minimum distance determined above, the geophysical wire will be retrieved to ensure they are protected.

4 REPORTING

All wildlife activities will be recorded and reported monthly during the field season. With the assistance of the independent Wildlife Monitor, reports will be submitted by the ERP Supervisor or designate on site to the General Manager, Kiggavik, the Manager, Nunavut Affairs, the consulting biologist, Baker Lake Hunters and Trappers Organization (HTO) the Baker Lake Conservation Officer, the GN Department of Environment (GN-DoE), Regional Biologist, Kivalliq Inuit Association (KIA) and Aboriginal Affairs and Northern Development Canada (AANDC). The monthly reports will be used to help construct a year-end overview to be included in the Kiggavik Project Annual Report.

5 REFERENCES

BHPB (BHPB Diamonds Inc). 2004. Ekati Diamond Mine 2003 Wildlife Effects Monitoring Program. Prepared by Golder Associates Ltd. for BHPB Diamonds Inc

BHPB. 2007. Ekati Diamond Mine 2006 Wildlife Effects Monitoring Program. Prepared by Rescan™ Environmental Services Ltd. for BHP Billiton Diamonds Inc

BQCMB. 2007. Letter from BQCMB providing comments and recommendations regarding the Kiggavik and Sissons Uranium Exploration Project (March 12, 2007)

BQCMB, 2008. Letter from BQCMB providing comments and recommendations regarding extension request with AANDC and KIA for the Kiggavik-Sissons Project (December 16, 2008)

Durey, O. 2007. Letter from Orin Durey providing comments and recommendations regarding the Kiggavik and Sissons Uranium Exploration Project (March 12, 2007)

Dyer, S.J., J.P. O'Neill, S.M. Wasel, and S. Boutin. 2001. Avoidance of industrial development by woodland caribou. Journal of Wildlife Management, 65:531-542

EC (Environment Canada). 2007. Letter from EC providing comments and recommendations to AREVA Resources Canada Inc. for Kiggavik and Sissons Uranium Exploration Project (March 12, 2007)

EC, 2008. Letter from EC providing comments and recommendations regarding extension request with AANDC and KIA for the Kiggavik-Sissons Project (December 16, 2008)

GN-DoE (Government of Nunavut, Department of Environment). 2007. Letter from GNDOE providing comments and recommendations to AREVA Resources Canada Inc. for Kiggavik and Sissons Uranium Exploration Project (March 7, 2007)

GN-DoE, 2008. Letter from GN-DoE providing comments and recommendations regarding extension request with AANDC and KIA for the Kiggavik-Sissons Project (December 16, 2008)

Aboriginal Affairs and Northern Development Canada (AANDC), 2007. Land Use Permit N2006C0037 (April 5, 2007)

Aboriginal Affairs and Northern Development Canada (AANDC), 2010, Land Use Permit N2009C0017 (January 21, 2010)

Kivalliq Inuit Association (KIA), 2007. Land Use Licence No. KVL306C02 (April 3, 2007)

KIA, 2008. Extension of Land Use Licence No. KVL306C02 (December 19, 2008)

Nunavut Impact Review Board (NIRB), 2007a. Screening Decision Report, NIRB File No. 06AN085. (April 3, 2007)

NIRB, 2007b. Screening Decision on Amendment Request from AANDC - Additional Terms and Conditions for NIRB File No. 06AN085 (August 30, 2007)

NIRB, 2009. Screening Decision on Extension Request from AANDC and KIA - Additional Terms and Conditions for NIRB File No. 06AN085 (January 9, 2009)

Nunavut Water Board (NWB), 2008. Nunavut Water Board Licence No. 2BE-KIG0812 (May 12, 2008)

Appendix A - Events and responses

Event	Contractors	Wildlife Monitor	ERP Supervisor or Designate
General Mitigation			
A disturbance to caribou	• Notify the ERP Supervisor • Assist with the completion of the Supervisor's Investigation Report where necessary	• May be required to assist in emergency situations such as using firearm for safety kills or notifying camp when danger (wildlife) is out of the area • Assist with the completion of the Supervisor's Investigation Report where necessary	• Complete a Supervisor's Investigation Report • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report
An incident occurs between grizzly bear, wolverine, wolf, fox and field staff	• Notify the ERP Supervisor • Assist with the completion of the Supervisor's Investigation Report where necessary	• May be required to assist in emergency situations such as using firearm for safety kills or notifying camp when danger (wildlife) is out of the area • Assist with the completion of the Supervisor's Investigation Report where necessary	• Complete a Supervisor's Investigation Report • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Notify the Baker Lake Conservation Officer • Note in monthly wildlife report
If a need for deterrents or other wildlife management techniques are identified	• No action required	• No action required	• Contact Baker Lake Conservation Officer
Caribou Mitigation			
Collared Caribou are identified as approaching site activities	• No action required	• Assist ERP Supervisor with identifying what the collar represents and aerial reconnaissance surveys where necessary	• Determine what the collar represents by contacting the GN and/or GNWT, environmental consultants, or exploration companies in the area • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report

If caribou with **calves** approach drilling rig between **May 15 and July 15,**	• Notify the ERP Supervisor and Wildlife Monitor • If caribou and calves are observed within **10 km** of drilling rig, shut down drilling activity (continue water circulation).	• Station at a vantage point for observing proximity of herd and presence of calves. • Notify the ERP Supervisor of observations • If drilling activity is suspended, continue monitoring and notify ERP Supervisor of caribou proximity to drill rig	• Advise Contractor to shut down drilling activity if Wildlife Monitor determines calves are present within **10 km** • Following verification from Wildlife Monitor, advise Contractor to commence drilling when caribou are outside the 10 km range • If caribou remain within **10 km** for >2 days, notify the Baker Lake Conservation Officer and consulting Biologist for further action • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report
> 50 caribou approach drilling rig during **June or July**	• Notify the ERP Supervisor and Wildlife Monitor • If >50 caribou are observed within **2 km** of drilling rig, shut down drilling activity (continue water circulation)	• Station at a vantage point for observing proximity of herd and presence of calves. • Notify the ERP Supervisor of observations • If drilling activity is suspended, continue monitoring and notify ERP Supervisor of caribou proximity to drill rig	• Advise Contractor to shut down drilling activity if Wildlife Monitor determines >50 caribou are present within **2 km** • Following verification from Wildlife Monitor, advise Contractor to commence drilling when caribou are outside the **2 km** range • If >50 caribou remain within **2 km** for >2 days, notify the Baker Lake Conservation Officer and consulting Biologist for further action • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report
Flight Mitigation			

>50 caribou are within 1 km of landing area	• Pilot will not land or take off within 1 km of >50 caribou except for flight safety. • Flights must be 610 m above ground when flying over >50 caribou (horizontal separation of 610 m is acceptable if 610 m altitude is not possible) • If possible, choose an alternate landing area > 1 km from the herd, • Notify the ERP Supervisor and Wildlife Monitor	• If landing area is within sight, monitor proximity of herd • Notify the ERP Supervisor of observations	• Notify pilots when >50 caribou are within 1 km of their landing area as advised by the Wildlife Monitor • Notify pilots when the caribou have moved outside the 1 km range of the landing area as advised by the Wildlife Monitor • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report
Aerial Geophysical Surveys			
During flight, 50 or more caribou are within the **aerial survey** route	• Notify the ERP Supervisor • The aircraft will relocate to another part of the block and repeat the reconnaissance flight or will be postponed until the animals are a distance of 2 km from the survey area	• No Action Required	• Notify Project Geologist or designate, Wildlife Monitor and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report.
If calves are present between May 15 and July 15	• Notify the ERP Supervisor • The survey will be postponed until either the calves are gone or the survey can be conducted outside of this time period.	• No Action Required	• Notify Project Geologist or designate, Wildlife Monitor and Manager of Nunavut Affairs of mitigating actions
Ground Geophysical Surveys			
Caribou cows and calves are present within 10 kms between May 15 and July 15	• Notify the ERP Supervisor and Wildlife Monitor • Retrieve wire following verification from ERP Supervisor	• Station at a vantage point for observing proximity of herd and presence of calves. • Notify the ERP Supervisor of observations	• The ERP Supervisor in consultation with the Wildlife Monitor will notify the Contractor to retrieve the wire • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report

> 50 caribou are within close proximity (as determined in Section 3.5.3 Protection Measures – Ground Geophysical Surveys) of the **ground survey** area during June/July	• Notify the ERP Supervisor and Wildlife Monitor • Retrieve wire following verification from ERP Supervisor	• Station at a vantage point for observing proximity of herd and presence of calves. • Notify the ERP Supervisor of observations	• The ERP Supervisor in consultation with the Wildlife Monitor will notify the contractor to retrieve the wire • Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions • Note in monthly wildlife report

AREVA Resources Canada Inc.

KIGGAVIK PROJECT, NUNAVUT

ABANDONMENT AND RESTORATION PLAN

May 2012 – Version 4 Revision 2

REQUIRED USERS

Required and other users are responsible for using the current version of the Abandonment and Restoration Plan as posted on Q:\Exploration\IMS. Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	October 2007	Updated to reflect changes in field activities/capabilities and areas of continual improvement
2	1	May 2008	Updated to reflect comments and conditions received by the Nunavut Water Board associated with the issuance of water licence no. 2BE-KIG0812
3	0	January 2009	Updated to reflect changes in field activities/capabilities and areas of continual improvement
4	0	January 2010	Updated to reflect changes in infrastructure
4	1	May 2011	Updated personnel titles and grammatical changes
4	2	May 2012	Updated to reflect personnel changes.

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Environment and Radiation Protection Supervisor

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

TABLE OF CONTENTS

1 PREAMBLE

The AREVA Resources Canada Inc. (ARC) Abandonment and Restoration (A&R) Plan is in effect from the time the required licences and permits are issued up to the expiry date. The Plan is intended to apply to the Kiggavik Project located approximately 80 km west of Baker Lake.

1.1 Purpose and Scope

Abandonment and Restoration (A&R) considerations are on-going during the life of the project. Progressive restoration provides an opportunity to reduce the extent of disturbed land over the life of the project.

The objectives of the A&R Plan are to:

- protect public health and safety by using safe and responsible reclamation practices;
- reduce or eliminate environmental effects, such as ground disturbance, once the project has been ceased;
- re-establish conditions which permit the land to return to a similar pre-exploration land use; and;
- reduce the need for long term monitoring and maintenance by establishing physical and chemical stability of disturbed areas.

The A&R Plan complies with the conditions of permits, licences, regulations and industry standards. The following principles have been established to guide the development of the overall A&R Plan:

- plan and implement in accordance with regulations;
- apply cost effective and appropriate abandonment and reclamation practices to reduce environmental risks and allow for traditional use of the land;
- maintain program of progressive abandonment and reclamation as an integral part of the project; and,
- incorporate new abandonment/reclamation methods and procedures, when applicable.

1.2 Revision to Manual

The Abandonment and Restoration Plan is reviewed on an annual basis and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this manual.

1.3 Responsibilities

The Senior Project Geologist is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Environment and Radiation Protection (ERP) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 INTRODUCTION

This A&R Plan has been prepared for a project that includes advanced exploration activities and environmental baseline program to be carried out by AREVA Resources Canada Inc (ARC).

Head Office location:
P.O. Box 9204
817 – 45th Street West
Saskatoon, Saskatchewan S7K 3X5

2.1 Location

The Kiggavik Project includes two properties:

- The Kiggavik site is located at approximately 64°26'N and 97° 37'W. The property consists of 17 mineral leases totalling 3,972ha (officially 9,808acres). All leases are currently on Crown Land (i.e: surface and subsurface rights are administered by Aboriginal Affairs and Northern Development Canada (AANDC)).

- The Sissons site is situated roughly 17 km south-west of Kiggavik at approximately 64°20'N and 97°52'W. The Sissons property consists of 22 mineral leases totally 14,730ha (officially 36,371.50acres). Five of the mineral leases, including those containing the Andrew Lake and End Grid deposits, are located on Inuit Owned Land subsurface parcels, as such surface rights are administered by the Kivalliq Inuit Association (KIA) and subsurface rights are "grandfathered" – administered by AANDC.

An exploration camp currently exists at the Kiggavik site. This camp can accommodate approximately 60 people.

2.2 Schedule

The Kiggavik Camp is temporary and seasonally occupied. Supplies are brought to site during the winter by a local contractor on a winter road. No buildings, equipment or waste will remain beyond the expiration date of the permits (i.e., Access to Inuit Owned Land; Land Use Permit; Water Licence), unless new permits have been obtained permitting the camp to remain. If unforeseen delays in permitting renewals occur, ARC will consult with the agencies to arrange for an agreement regarding site infrastructure pending a permitting decision. The project site is secured and readied for each seasonal shutdown; the final restoration will begin once the program is complete.

2.3 Infrastructure – Main Camp

In 2007, the temporary camp accommodated approximately 32 persons, was expanded to accommodate approximately 50 persons in 2008 and 60 in 2009. Further camp expansions and

personnel requirements will be discussed in permit applications for the field season. The camp currently consists of the following buildings:

- One storage shed/back-up generator/shop
- One generator building (housing the current generator)
- One helicopter storage/shop
- One kitchen with storage
- One washroom/dry building constructed with separate male/female facilities
- Two offices
- 17 sleeping units (one is a first aid shack)
- One fuel storage areas (equipped with Arctic Berms)
- Grey water collection area
- Industrial incinerator
- Core storage
- Five core logging tents
- Radioactive materials storage compound

Fuel esker containing 8 bulk fuel tanks, three for Jet-B fuel and five for diesel fuel, and fuel drums stored on secondary containment

Additions may include the following:

- new sleeping units
- additional office space
- small core logging sheds/tents located in the vicinity of where the drilling will take place (e.g.*:* Kiggavik and Sissons) and core storage racks. A shed and core storage currently exist at the Andrew Lake drill site, as well as core storage at the Kiggavik site and at Pointer Lake.

3 SEASONAL SHUTDOWN

3.1 Buildings and Contents

Equipment is either removed from site, or stored within buildings or sea containers to ensure they can withstand the winter season. Canvas tents are secured and braced internally so they can withstand snow and wind. All wooden buildings are secured with nailed plywood over the windows and doors to prevent inadvertent opening.

3.2 Water System

Pumps and hoses are drained and dismantled. Pumps may be removed from site for servicing or put into storage along with the hoses.

3.3 Fuel Caches and Chemical Storage

An inventory is conducted prior to leaving at the end of the field season in order to track the items that are removed or remain at site. A thorough inspection of all fuel caches is completed and the remaining, not required, empty fuel drums are removed from site. Chemicals, including cleaning products, are removed from site for storage and or disposal. If any chemical products ($CaCl_2$) remain on site they are stored in secure buildings or sea container.

3.4 Waste

Combustible waste: All non-hazardous combustible waste is burnt in a Single Chamber Cyclonator Incinerator (Series CY1000). The incinerator is stored at the camp site for use the following year. Incinerator ash is collected in drums and will be stored until shipped off-site to an approved handling facility (i.e.: Baker Lake Landfill)

Greywater sump: The greywater collection area is inspected, marked and photographed.

The Waste Management Plan and Radiation Protection Plan details waste handling and are in effect from the time the exploration licence is issued to the time it expires.

3.5 Drill Sites

The drill is dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drill components may winter at site, be removed via the winter road or may be flown out by the drilling contractor.

All drill sites from the current year's field program are inspected for fuel stained soil and undergo a radiation survey for radioactive contamination. Contaminated soil or cuttings are collected in appropriate containers and stored in the radioactive storage compound for future handling, which may include transfer to an operating mine site.

Drill sites must be cleaned to the extent that the gamma dose at a height of 1 m is less than 1 µSv/h above background. To the greatest extent possible, all residual radioactive materials accumulated during drilling are disposed of down the drill hole. Where this is not practicable, radioactive material is collected, appropriately packaged and stored in the existing core storage areas. Gamma radiation levels at 1 m from the surface of the core storage area should be reduced to 1 µSv/h above background and in no instances exceed 2.5 µSv/h. As is necessary, residual radioactive material may be transported to the McClean Lake Operation for storage and disposal.

Drill holes are sealed by cementing/grouting the upper 30 m of bedrock or the entire depth of the hole, which ever is less or otherwise approved of by the Nunavut Water Board (NWB) in writing.

Any remaining waste is taken to camp to be burned or if required, flown off-site to an approved disposal location.

3.6 Contamination Clean Up

Any soil around camp that has become contaminated and had gone previously unnoticed is treated as per the Spill Contingency Plan. Before and after photos are taken to document the contamination and the clean-up.

Clean-up will be conducted in accordance with Government of Nunavut's Department of Environment - Environmental Guideline for Site Remediation.

3.7 Progressive Reclamation

It is ARC's intention to reclaim disturbed sites in an adequate and acceptable manner. Proper reclamation techniques are currently being investigated and will be implemented under the direction and approval of experienced consultants, community members and regulatory agencies. Restoration work will be completed prior to the expiry of the land use licence. This will include but is not limited to reclaiming surface disturbance to promote the growth of vegetation.

3.8 Inspection and Documentation

A full inventory and complete inspection of all areas are conducted prior to seasonal closure. Photos are taken to document the conditions prior to leaving the site for the winter. These photos are included in the annual report submitted to the NWB, INAC and KIA and included in any required spill reporting.

4 FINAL ABANDONMENT AND RESTORATION

The following activities will occur upon cessation of the current exploration/feasibility program, unless further activities or development are anticipated.

4.1 Buildings and Contents

All buildings will be dismantled and removed or burned (if acceptable). All wooden structures including floors will either be burned or shipped off-site, depending on the nature of the wood. As per the Waste Management Plan, wood products are sorted then non-treated wood products are incinerated and treated wood will be shipped off-site for proper disposal.

4.2 Equipment

All equipment, including pumps, generators, etc. will be dismantled and removed from the project area.

4.3 Fuel Caches and Chemical Storage

All fuel drums and EnviroTanks will be removed. All areas where there have been fuel caches will be thoroughly inspected. The liner of the secondary containment will be removed and taken to an approved disposal facility for reuse or proper disposal, if it can not be reused internally. Any contamination at fuel cache sites will be cleaned up as well as any debris removed. Contaminated soil will be tested for petroleum hydrocarbons (fraction F1 through F4) as per Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (2001) and benzene, ethylbenzene, toluene and xylene as per Canadian Soil quality Guidelines for the Protection of Environmental and Human Health (2004). Any contaminated soil will be handled as prescribed by the Spill Contingency Plan. Final photos will be taken of all fuel caches for inclusion in the final report.

All chemicals will be removed from site. Areas where chemicals have been stored will be inspected to ensure that there has been no contamination.

4.4 Sumps

If sumps are used, they will all be properly closed out at the end of the project and will be inspected to ensure that there is no leaching, run-off, or radiological and hydrocarbon contamination. Any contaminated material found will be treated as per the Spill Contingency Plan. Sumps will be back-filled and levelled as required. Final photos will be taken.

4.5 Camp Site

A final inspection of the camp site area will be conducted to ensure that there is no waste left behind. All wastes that are not burnable will be removed from site and taken to an approved disposal facility.

4.6 Drill Sites

The drill will be dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drill may be flown out by the drilling contractor or taken out overland during the winter.

All drill sites will be inspected for radioactive or hydrocarbon contamination. Any contaminated material will be treated as per the Spill Contingency Plan. Any remaining waste will be taken to camp to be burned if possible or to be flown out to an approved disposal location.

An inspection will be conducted by ARC personnel to ensure that all drill sites are/have been restored and sumps have been covered and levelled.

4.7 Drill Hole Abandonment

Drill holes that encounter uranium mineralization with a uranium content greater than 1.0% over a length of more than 1 m with a meter percent concentration greater than 5% will be sealed by cementing over the entire mineralization zone; this should be at least 10 m above and below each mineralization zone. This practice will be performed as the holes are completed.

4.8 Helicopter Pads

The helicopter pads consist of wooden platforms. The wood will be burnt or taken off site to an approved disposal facility. The soil around the helicopter pads will be inspected for contamination. As the ground has not been altered, scarification will not be necessary.

4.9 Landing Eskers

The esker which has been used as a landing strip will be inspected for wearing and if need be restored to pre-use conditions.

4.10 Contamination Clean Up

Any contamination will be treated as per the Spill Contingency Plan.

4.11 Inspection and Documentation

A complete inspection will be conducted of all areas prior to closure. Photos will be taken to document the conditions prior to leaving the site for use in the final report. Before and after photos will be taken to document any contamination and resulting clean up. These photos will make up part of the final report to be submitted to the Water Resource Inspector; the annual report submitted to the NWB, INAC and KIA and will be included in any required spill reporting.

All agencies will be contacted and notified once the final clean up has been conducted.

Agency contact information can be found in the Contact List.

AREVA Resources Canada Inc.

KIGGAVIK PROJECT, NUNAVUT

NOISE ABATEMENT PLAN

May 2012 – Version 3, Revision 2

REQUIRED USERS

Any other users are responsible for using the current version of the Noise abatement Plan as posted on Q:\Exploration\IMS. Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
01	00	March 2007	Original submission
02	00	October 2007	Updated to reflect changes in field activities/capabilities and areas of continual improvement
03	00	January 2009	Updated to reflect changes in field activities/capabilities and areas of continual improvement
03	01	May 2010	Updated to reflect changes in field activities/capabilities and areas of continual improvement
03	02	May 2012	Updated to reflect personnel changes. Made consistent with other Plans.

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Supervisor, Environment and Radiation Protection

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

TABLE OF CONTENTS

1 PREAMBLE

This Noise Abatement Plan will be in effect for the duration of the Kiggavik Project and associated activities. The Project is located approximately 80km west of Baker Lake:

- West Boundary 97° 57’ 50.4” W Longitude;
- East Boundary 97° 20’ 56.4” W Longitude;
- North Boundary 64° 39’ 28.8” N Latitude; and,
- South Boundary 64º 17’ 02.4” N Latitude.

2 INTRODUCTION

The Kiggavik camp is a fly-in only camp and is temporary and seasonally occupied. All drilling activities and most environmental baseline activities take place during the summer months. Supplies to operate the camp and field program are moved overland in the winter months. Camp set-up takes place prior to the summer work season. Noise generation is expected to occur during camp set-up, camp operation, winter road use and during drilling activities.

Noise controls and abatement serve a combination of environmental and occupational health and safety purposes. The focus of this abatement plan is on control of environmental noise for the protection of wildlife (birds and mammals).

2.1 Revision to Manual

The Kiggavik Noise Abatement Plan is reviewed on an annual basis and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this manual.

2.2 Responsibilities

The Senior Project Geologist is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Environment and Radiation Protection (ERP) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

3 ACTIVITIES REQUIRING NOISE REDUCTION

Drill rigs, generators, vehicles and aircraft (fixed-wing and helicopters) are the major contributors of noise to the Project. To decrease the amount of noise, the following will be implemented:

- the drill rigs are equipped with mufflers or other appropriate noise abatement equipment;
- the generators are equipped with mufflers;
- ATVs are equipped with mufflers and,
- Normal practice for long range flights (i.e.: Baker Lake to Kiggavik site) is to fly aircraft at a minimum of 610m above ground level, except during take off and landing, when ceiling conditions do not permit or when safety risks arise
- For relatively shorter transportation flights (e.g.: movement of staff and equipment between camp and deposits on Kiggavik lease) a strong attempt is made to fly aircraft at a minimum of 300m above ground level, except during take off and landing as described in the Wildlife Mitigation and Monitoring Plan, when ceiling conditions do not permit or when safety risks arise
- Low-flying flights may need to be conducted at lower altitudes for geophysics surveys and wildlife monitoring. Low-level geophysics surveys are preceded by reconnaissance survey as described in the Wildlife Mitigation and Monitoring Plan.
- As per the Wildlife Monitoring and Mitigation Plan, all activities are suspended if 50 or more caribou are within 2 km of the activity.

AREVA Resources Canada Inc.

Kiggavik Project, Nunavut

URANIUM EXPLORATION PLAN

May 2012- Version 3 Revision 2

REQUIRED USERS

Required and other users are responsible for using the current version of the Uranium Exploration Plan as posted on Q:\Exploration\IMS. Users may print copies of this plan, but are ultimately responsible for ensuring they are using a current copy as posted. Users are requested to destroy all previously printed copies of the plan when they are informed of revisions.

HISTORY OF REVISIONS

Version	Revision	Date	Details of Revision
01	00	March 2007	Original submission
02	00	October 2007	Updated to reflect opportunities for improvement
03	00	January 2009	Updated to reflect opportunities for improvement
03	01	May 2011	Updated to reflect personnel titles and grammatical changes.
03	02	May 2012	Updated to reflect personnel changes

Original Copy of this Manual:

Approved and Signed by title: **Kim Jackson**

Environment and Radiation Protection Supervisor

Approved by:
Signature and Date

Approved and Signed by title: **Joseph Roux**

Vice President, Exploration

Approved by:
Signature and Date

The original hard copy of this approval page has been signed and is located at the AREVA Resources Canada Inc. corporate office.

Table of Contents

1 INTRODUCTION

The AREVA Resources Canada Inc. (ARC) Uranium Exploration Plan applies to the Kiggavik Project located approximately 80 km west of Baker Lake.

1.1 Purpose and Scope

The Uranium Exploration Plan is designed to meet the requirements of the Water Use License 2BE-KIG0812 issued by the Nunavut Water Board (NWB), the Saskatchewan Environment Mineral Exploration Guidelines and Best Management Practices, and the Canadian Nuclear Safety Commission (CNSC) Regulations; however CNSC does not regulate exploration activities.

1.2 Revision to Plan

The Uranium Exploration Plan is reviewed on an annual basis and is updated as required to keep the information current and consistent with regulatory and procedural changes. A History of Revisions can be found at the front of this manual.

1.3 Responsibilities

The Senior Project Geologist is responsible to ensure that this plan is implemented. Implementation may be completed by:

- Project Geologist
- Environment and Radiation Protection (ERP) Supervisor
- Or designate

The Vice President, Exploration is ultimately responsible for any activity being carried out by Kiggavik Project personnel.

2 SITE INFORMATION

The Kiggavik Project includes two properties:

- The Kiggavik site is located at approximately 64°26'N and 97° 37'W. The property consists of 17 mineral leases totalling 3,972ha (officially 9,808acres). All leases are currently on Crown Land (ie: surface and subsurface rights are administered by Indian & Northern Affairs Canada (INAC)).

- The Sissons site is situated roughly 17km south-west of Kiggavik at approximately 64°20'N and 97°52'W. The Sissons property consists of 22 mineral leases totally 14,730ha (officially 36,371.50acres). Five of the mineral leases, including those containing the Andrew Lake and End Grid deposits, are located on Inuit Owned Land subsurface parcels, as such surface rights

are administered by the Kivalliq Inuit Association and subsurface rights are “grandfathered” – administered by INAC.

An exploration camp currently exists at the Kiggavik site. This camp can accommodate approximately 60 people.

3 TRAINING

ARC provides necessary training to all its employees and contractors to ensure worker safety and protection of the environment during exploration activities. The training programs provided are designed to meet the requirements of the Canadian Nuclear Safety Commission (CNSC) *Uranium Mines and Mills Regulations* (although CNSC does not regulate uranium exploration projects), territorial *Workers Compensation Board*, *ISO14001:2004 and OHSAS18001:2007.*

All new employees, including contractors, receive appropriate radiation protection training prior to beginning work. This includes instruction on the origins of ionizing radiation, types of radiation, health risks, principles of radiation safety and regulatory compliance. Training also includes the safe handling, management and disposition of radioactive materials such as drill muds and cuttings, and radioactive core.

All visitors at the Kiggavik site for more than 72 hours, or who will be left without an escort will receive radiation protection training. Visitors who have not received training must be escorted on site at all times.

All Kiggavik project personnel supervising the shipment of radioactive materials must possess a valid TDG certificate in accordance with Transport Canada Transportation of Dangerous Goods Regulations. If radioactive materials are to be transported by aircraft, TDG training is to include the necessary aviation components for Class 7 materials. If contractors for the project have their own training program they must submit evidence of the training program.

All ARC field personnel and contractors who handle fuel, lubricants and/or radioactive material require spill response training. If the contractors have their own training program they must submit evidence of the training program. Training for ARC employees is provided in accordance with the *Spill Contingency Plan*. Contractors are given a copy of said plan. If the contractors do not have an acceptable training program in place, AREVA will supply the training material and/or provide the training as required.

4 DRILLING OPERATIONS

As required by the current water use licence issued by the NWB, all drill sites are located at a minimum of 30 m beyond the ordinary high level water mark of any nearby water bodies, unless an exemption to this requirement has been granted.

During drilling activities, drill mud solids or cuttings in non-mineralized zones are deposited on the ground, in a natural low-lying depression. This natural depression must also be located at a minimum of 30 m beyond the ordinary high level water mark of any nearby water bodies, and where direct flow

into the water body is not possible. A radiological survey is conducted before and after drilling to ensure elevated readings are not occurring. Restoration of the natural low-lying depression and drill sites will be carried out as per the Abandonment and Restoration Plan.

When mineralized core is intersected, all drill mud and cuttings are collected in appropriate containers and categorized as radioactive through appropriate radiation measurements.

Drill mud or cuttings with a uranium content greater than 0.05% will be collected and stored at the radioactive storage compound with an appropriate containment system in place. Down hole disposal of cuttings is not often practical at Kiggavik.

Any drill hole that encounters mineralization with uranium content greater than 1.0% over a length of > 1.0 m and with a metre-per-cent concentration of > 5.0 is sealed by grouting over the entire length of the mineralization zone and not less than 10 m above or below each mineralization zone.

GPS locations of all drill locations are recorded on the drill log and submitted with the annual report submitted to the regulatory agencies.

5 CORE LOGGING AND STORAGE

Logging of core is conducted mainly in a separate facility, which is located a few hundred metres away from the camp facilities. Geotechnical logging of core may also be conducted at the drill site.

Permanent and long-term storage areas of radioactive material, including core and drill cuttings, are located at least 31 m from the main camp and at least 100 m from the high water mark of all water bodies.

Gamma radiation levels at 1 m from the surface of a storage area should be reduced to 1 µSv/h and in no instances exceed 2.5 µSv/h.

Permanent on-site core storage areas are appropriately labelled with radiation warning signs.

If long-term off-site storage is required, ARC intends to transport the material to be stored at an operating uranium mining facility.

6 RADIOISOTOPES

Nuclear materials and radiation devices are used for exploration and instrument calibration. The possession, use, storage, and disposal of nuclear materials and radiation devices are carried out in accordance with Canadian Nuclear Safety Commission (CNSC) *Nuclear Substances and Radiation Devices Regulations* and licence conditions.

7 SPILLS

The uncontrolled or accidental release of any radioactive materials including drill mud solids and cuttings is considered a spill. All spills of radioactive material are to be appropriately reported and

responded to in accordance with the Spill Contingency Plan, which was submitted and approved by authorising authorities with the applications submitted to conduct the field program.

In the event of a spill, radioactive materials are collected and necessary site remediation undertaken to meet the site abandonment criteria of less than 1 μSv/h above background at a height of 1 m. To the greatest extent possible, all spill affected areas are to be decontaminated.

Material collected during the clean-up is stored in appropriate containers and stored in the on-site long-term storage area, for future handling.

8 SHIPPING OF RADIOACTIVE MATERIALS

Shipping and receiving radioactive material is carried out in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations* and the Transport Canada *Transportation of Dangerous Goods Regulations*.

All personnel responsible for or directly involved with the shipment of radioactive materials must possess a valid transportation of dangerous goods (TDG) certificate which includes the transportation of Class 7 materials. Support personnel providing assistance during the preparation and shipment of radioactive material do not require TDG training as long as they are working under the direct supervision of trained individuals.

9 SITE ABANDONMENT AND RESTORATION

Site abandonment and restoration is carried out in accordance with the Abandonment and Restoration Plan.

Gamma radiation surveys are conducted at each site prior to drilling and prior to final abandonment. Contaminated soil or cuttings are collected in appropriate containers and stored in the long-term core storage area for future handling, which may include transfer to an operating mine site. All drill sites are cleaned to ensure that the gamma dose rate at a height of 1m is less than 1 μSv/h above ambient background.

All materials and equipment leaving the drill site are monitored for contamination in accordance with procedure, *EXP-740, Routine Radiological Monitoring Schedule*. Materials or equipment that cannot be decontaminated to meet unrestricted release criteria are either stored in the long-term core storage area or shipped to a licensed facility such as the McClean Lake Operation in accordance with the CNSC *Packaging and Transport of Nuclear Substances Regulations* and the Transport Canada *Transportation of Dangerous Goods Regulations*.

10 REFERENCES

Kiggavik Project Abandonment and Restoration Plan

Kiggavik Project Spill Contingency Plan

Procedure, *EXP-740, Routine Radiological Monitoring Schedule*

Saskatchewan Environment Mineral Exploration Guidelines and Best Management Practices

Canadian Nuclear Safety Commission (CNSC) Regulations

CNSC *Packaging and Transport of Nuclear Substances Regulations*

Transport Canada *Transportation of Dangerous Goods Regulations*