



September 14, 2011

Mr. Lowell Spackman, District 1 Supervisor
Land Quality Division
Wyoming Department of Environmental Quality
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CERTIFIED MAIL #7010 0780 0001 6001 9954 RETURN RECEIPT REQUESTED

RE: HH 15-20 Wellfield Release, Mine Unit 15A, Remediation Proposal, Cameco Resources,
Permit 633

Dear Mr. Spackman,

Power Resources, Inc. d/b/a Cameco Resources (Cameco) is providing a formal proposal of remediation for the header house 15-20 wellfield release that occurred May 3, 2011. Cameco provided the soil sample analyses to Wyoming Department of Environmental Quality-Land Quality Division (WDEQ-LQD) in an Email dated August 12, 2011. Cameco has committed to the cleanup of the impacted soil under criteria established by the NRC. The attached plan describes the proposed remediation and disposal of the impacted soil in four phases. The submittal is for LQD to review and comment pursuant to the discussions LQD held with Cameco on August 9, 2011 referencing a potential NOV.

The proposal stipulates that soil removed from the impacted delineated areas will be loaded direct to 11e (2) byproduct containers and not put to a temporary staging area as discussed in the plan-DRAFT submitted to LQD August 29, 2011. Reference to the NRC Technical Criteria Unity rule is contained in the proposal.

Please contact Ken Garoutte @ 307-358-6541, ext 476 or Kenneth_Garoutte@cameco.com if you have any questions.

Respectfully

Brent Berg
General Manager

BB/kg

Attachment: Remediation Plan for Mine Unit 15A Wellfield Release

ec: Cameco Resources – Cheyenne

cc: File SR 4.3.3.1

Doug Mandeville, NRC (2 copies) Certified Mail #7010 0780 0001 6001 9947

Document Control Desk, NRC Certified Mail #7010 0780 0001 6001 9930

**Mine Unit 15A Wellfield Release, Header House 15-20 Area
Soil Remediation Proposal
Cameco Resources Permit 633**

INTRODUCTION

Cameco provided LQD a written notification in a letter dated May 9, 2011 of a release of solutions that occurred in wellfield 15A, header house 15-20 on May 3, 2011. Verbal notification of the release was provided to LQD on May 4, 2011. The written report estimated 1500 gallons of production fluid was released impacting an area of approximately 12,077 square feet.

The release involved eight (8) production wells (15P-409 through 15P-416). The impacted area was mapped using a Trimble GPS unit with the results transferred to the Smith Ranch-Highland Site Map for archiving. The impacted area was gamma surveyed using an unshielded Ludlum Model 19 MicroR meter and soil sampled at ten (10) locations including a background sample. See Table 1. The sample results indicated nine (9) sample locations were above the 5 pCi/g decommissioning criteria established by the NRC. A map showing the areas of impacted soil is attached for your review.

SOIL SAMPLING RESULTS

The sample results for uranium are reported in mg/Kg and require conversion to pCi/g, while the results for radium226 are reported in pCi/g. After conversion, uranium and radium results are summed and compared to the 5 pCi/g criteria using the NRC's Unity rule as found in 10 CFR Appendix A to Part 40, under I. Technical Criteria, *Criterion 6*, sub criterion (6). After subtracting background (Bkg), all nine (9) soil samples were above the 5 pCi/g Unity rule.

Conversion formula:

$$\text{mg/Kg} \cdot \text{Kg}/1\text{E}6\text{mg} \cdot 6.77\text{E}-7\text{Ci/g} \cdot \text{pCi}/1\text{E}-12 \text{ Ci} = \text{pCi/g}$$

The specific activity of uranium is 6.77E-7 Ci/g as per 10 CFR PART 20, appendix B.

Converting the uranium reported in mg/Kg to pCi/g is accomplished using the above formula.

TABLE 1

Sample ID	Uranium mg/kg	Radium pCi/g	Uranium pCi/g	Unity pCi/g	Unity-Bkg pCi/g	MicroR/hr
1	204	27.7	138	165.7	162.2	22
2	86	3.3	58	61.3	57.8	14
3	21.5	2.6	14	16.6	13.1	16
4	47.7	3.5	32.3	35.8	32.3	18
5	31.7	1.6	21.5	23.1	19.6	14
6	204	38.5	138	176.5	173	16
7	13.1	1.9	8.9	10.8	7.3	16
8	72.6	3.7	49.2	52.9	49.4	14
9	109	12.8	13.8	86.6	83.1	17
10 (Bkg)	3.5	1.1	2.4	3.5		17

REMEDIATION PLAN

A Ludlum Model 2221 Scaler/Ratemeter with a 2" sodium iodine probe has been procured for environmental assessments for radionuclides. The meter will respond to gamma radiation in counts per second and the probe will be contained within a hand held portable lead shield. The probe will be positioned approximately 3-4" above the surveyed surface and exposed through an opening in the bottom of the shield. The counts per second will be correlated with known pCi/g concentrations to arrive at pCi conversion to be used during the walk over.

The area affected will be fenced off to prevent access as requested by WDEQ until remediation activities commence. The remediation will consist of four phases described below.

Phase I: Soil Surveying

A Health Physics Technician will walk over the impacted area while holding the shielded gamma meter. The walk over survey will be conducted following a grid pattern of parallel lines approximately 10 feet apart over the impacted area. The Technician will begin at a point 2-3 feet outside the delineated release area and position the Ratemeter 3-4" over the surface and determine the pCi concentration. Then the Technician will take one step (2-3 feet) along a straight line, position the Ratemeter 3-4" over the surface, and again determine the pCi concentration. The Technician will then take another step and determine the next reading. This process will continue in a straight line until a reading is taken beyond the delineated release area as depicted on the map. The Technician will then repeat the process on a parallel line approximately 10 feet away. The walk over survey will be completed once all the separate impacted areas as delineated on the map have been surveyed. See attached map demonstrating 10 foot parallel grid lines over the entire impacted area as an example. Actual survey lines used will vary to match up with the separate delineated areas.

The background Unity value will be subtracted from the reading displayed by the Ratemeter to determine the net pCi at a given point. Values over the 5 pCi conversion will be flagged for removal.

Phase II: Soil Removal

Header house 15-20 will be shut down during the removal operation. A 770CH-John Deere small profile grader together with a backhoe frontend loader will be used to remove the flagged soil from the impacted area and load directly to approved DOT IP-1 11(e) 2 byproduct containers. Areas flagged around the well heads will require hand shovel removal and will be placed onto nearby flagged areas. The grader will lay over 2-5" of flagged soil depending on the irregularity of the surface for removal by the loader. The freshly cut area is ready to re-survey to determine if more depth of soil is to be removed. A loader will remove laid over soil to approved DOT IP-1 11(e) 2 byproduct container(s) staged adjacent to the area on top of barrier liners. The barrier liners will capture loose soil that fall from the loading operation. The loose soil will be hand shoveled into the container. Once containers are loaded they will be shipped using site procedures complying with DOT regulations to an NRC approved 11 (e) 2 by-product disposal facility.

Phase III: Re-surveying

The above procedures described in Phase I and II will be repeated in the areas that had soil removed until the walkover gamma readings are within acceptable range.

Phase IV: Surface reclamation

Once all of the removed soil is all loaded to containers the areas that had soil removed will be mulched and drill seeded. The perimeter of the disturbed area of soil removal will have erosion and sedimentation controls installed until vegetation is established.

PLAN CONTINGENCIES

The remediation plan is contingent upon WDEQ/LQD approval according to the draft 'Tracking Sheets for Commitments & Deadlines for Compliance' provided to Cameco on August 24, 2011. The estimated time frame to complete the remediation once Phase I begins will depend on issues of weather, how equipment/personnel may be needed elsewhere , and arrangements to bring in approved DOT IP-1 11(e) 2 byproduct containers in a timely manner. Cameco's expectation is that WDEQ/LQD approval can be obtained expeditiously so that the remediation may begin in October, 2011.

