

Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations:



John Corra, Director

January 5, 2011

Mr. Doug Mandeville
U.S. Nuclear Regulatory Commission & Quality
Two White Flint North
11545 Rockville Pike, T7E18
Rockville, MD 20852-2738

RE: Seemil Radind Reviews be deviced from Control of the State of the Person of the State of the Person of the State of th

Dear Doug:

The Land Quality Division (LQD) sent second round comments to Cameco Resources on the November 8, 2010 with concerns for the proposed extended restoration schedule. I have enclosed those reviews for your information.

If you have any questions, please contact me at <u>restrictive to 307-777-7048</u> in the revenue. CR is need to prome the about the third passed one extension to restore the <u>Sincerely</u>, for it is read to the contact the school of a meeting with LQD to discuss the contact.

Want atheres ins place contact me of proving governor 307- 11 out

Pam Rothwell
Permit Coordinator/District I Assistant Supervisor
Land Quality Division

Enclosures
P. a Lee (ell.)
Permit Condimator District I Assistant of
Land Quality Division

agoveragion Brister, Can e. (Recources, Cheyenne, W.Y.

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ADMINOUTREACH Herschler:Building 122. West 25th Street Cheyenne, Wy 82002 · http://deg.state.wy.us water αυαμγή ΑβΑΝΟΟΝΕΟ ΜΙΝΕ΄ "ΑΙΚΑΙ ΤΑΙΚΑΙ ΤΑΙΚΑΙ

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Dave Freudenthal, Governor

John Corra, Director

November 8, 2010

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LANGE PROPER

Mr. Angelo Kallas

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Manager, Safety, Health, Environment & Quality and using reverse a constant Camero Resources had grove water modeling would be used to be element

P.O. Bilk 12 ibring the meaning Committee of the

Glenrock: WY 82637

RE: "TFN 5-1/119, Non-Significant Revision, Revised Restoration Plan, T2 Review to the Permit 603: Highligh Uranium Projects Cameco Resources (CR) demand the

Table 11 Rest aution

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Den Mr. Kallas:

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The Land Quality Division (LQD) has completed the review of responses received on September 16. 2010! Due to the revised information sent with the responses, the LQD has provided additional comment on the new proposed changes. Please find the review enclosed. MARNIS

There is concern with the extended time period proposed in the restoration schedule of the revision CR will need to provide justification for this proposed time extension to restore the groundwater: It is recommended that CR schedule a meeting with LQD to discuss the enclosed review but they not explain the bury delays for currently product. . . ellibrids The maniferance. misserment installation and replacement of a middine एसक सार अध्यास्त्राता है। सार सेव

If you have any truestions please contact me at prothwid wo. gov or 307-77-7048 changing the start of restocution and for extending the length of this for restoration. (She

Sincerely,

conse Accomplify. The timelines now match 1811.

Pam Rothwell melade a pre-restoration time bar on Attachment 1. (%1)

Permit Coordinator/District I Assistant Supervisor
Land Quality Division
Post France of Mr. Control. Please metade groundwater sweep in the water balance. ministry of the first of the English of

Joe Brister, Cameco Resources, Cheyenne, WY cc:

> the blok. The text describing the sense alsocies the pre-residuation place . A have included server obtain because here excuell changing and pinches

blumperment. See her opening the properties of the should be exposed to the street the street of in thirties this phase these not contribute. Additional wellfield regression and the

Marechier Building • 123 West 25th Street • Chavenne, Wyoming 52002 • http://dec.etate.wy.us



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CAMECO RESOURCES, HIGHLAND URANIUM PROJECT, PERMIT 603

INTRODUCTION

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On July 23, 2009 Cameco Resources (CR), Land Quality Division (LQD) and the Nuclear Regulatory Commission (NRC) discussed groundwater restoration plans at the Smith-Highland ISL mines. CR proposed using less groundwater sweep (GWS) than had traditionally been utilized as little benefit has been recognized with GWS. The focus would be a slower process, maintaining the cone of depression with a 20% bleed and using reverse osmosis (RO). It was suggested by CR that groundwater modeling would be used to develop plans for wellfield restoration. During the meeting CR indicated a new restoration schedule would be submitted to reflect these proposed changes.

LQD received the proposed change on August 17, 2009 which consisted of a single page change to the permit reclamation plan (Attachment 1, Highland Uranium Project – Estimated Time Table of Restoration Activities). Technical review comments were sent to CR on December 21, 2009. CR submitted responses to comments on September 17, 2010 with a completely new schedule for review and included text changes to the operations and reclamation plans. Therefore, the following review includes a review of the responses as well as new comments to address the revised proposal.

COMMENTS

Response Not Acceptable. The response discusses the short term disposal capacity issues that resulted in delays in restoration of the current wellfields that are in restoration, but does not explain the long delays for currently producing wellfields. The maintenance, infrastructure installation and replacement wells would have been incorporated into the present schedule and therefore not affect the timelines. Please provide justification for changing the start of restoration and for extending the length of time for restoration. (SI)

. at de-

- 2 Response Acceptable. The time lines now match. (SI) adaption to assume the reserved region.
- 3. Response Not Acceptable. The pre-restoration phase needs to have a separate time bar. Please include a pre-restoration time bar on Attachment 1. (Si)
- Response Not Acceptable. The water balance in Attachment 3 only lists RO Reject and Post Production MU Control. Please include groundwater sweep in the water balance.
- Response Not Acceptable. The pre-conditioning phase should be shown separately on the table. The text describing the actions taken during this phase does not completely discuss the pre-restoration phase activities. Additional wellfield preparation activities have included re-plumbing header houses, well cleanouts and pipeline installation.

TFN 5 1/119, Restoration Plan Revision Permit 603, Cameco Resources Page 2

Please show the pre-conditioning phase time bar on Attachment 1 and add additional discussion of the wellfield preparation activities to the text. (SI)

- 6 Response Acceptable. (Si)
- 7 Response Acceptable. (81)
- 8 Responsé Acceptable: (SI)
- Response Not Acceptable. The response states that the average monthly inflow to PSR#2 is 180 gallons a minute. The average irrigation rate shown on Attachment 3 for Smith Ranch and Amendment 3 for Highland includes 180 gallons per minute for each permit for a total average application rate of 360 gallons per minute. Please correct the attachments. (SI)

NEW COMMENTS .. Prop.

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- Page RP-7. The revised text describes the progressive change-over to restoration whereby portions of a wellfield may be brought into destoration at any one time. CR will need to clearly describe the transition from production to restoration in the text. i.e., how long it will take to convert a wellfield to full restoration from production? Isothis considered the pre-restoration period? How is the "end of injection? water quality average for the wellfield derived if the entire wellfield is not sampled at the same time? At what point does CR declare the wellfield is in restoration for the beginning of active restoration in the sampling (i.e., every two menths for conductivity, chloride and transum?). Reasoning provide a detailed discussion of the transition from (production to groundwater restoration in the text. (PCR)
- Page RP-18. 7A. The proposal describes the restoration well pattern in contrast to the production pattern as considerably different! CR must provide a typical restoration wellfiled pattern which includes an average number of injection and recovery wells used and an average number of sidditional restoration wells necessary to complete restoration (per pattern area). LOD needs assurance that the surety bovers an average number of new restoration wells to complete proundwater restoration of all mining units for the life of minist (PCR) severe the concerns with the vetoral or schedule in other to accelerate the approval of the revision (PCR).
- Page RP-7, second paragraph. CR states that a ground water restoration plan for a mine unit will be developed prior to starting the restoration activities. CR should provide this plan to the LQD. Please add the commitment to develop a detailed restoration plan for the

TFN 5 1/119, Restoration Plan Revision Permit 603, Cameco Resources Page 3

- iffine units for LQD review and approval. NOTE: LQD is currently reviewing the still notifications for initiation of groundwater sampling for restoration for MUs D and E and will be sending a letter with recommendations for the information needed in the wellfield restoration plans: (PCR)
- Attachment 1, Restoration Schedule shows a time bar for the addition of bioremediation/chemical reductant. Please include the water usage for this phase in the water balance. (PCR)
- Attachment 3, 2010 Projected Water Balance. The water balance and restoration schedule are based on updated estimated calculations submitted in September of 2010. The original schedule was proposed in August 2009. LQD continues to have comments which will likely require further changes to the schedule (i.e., groundwater sweep estimates and reductant estimates). LQD is unsure of the disposal well usage on the schedule due to delays in completion of disposal wells. Is MU-E currently in groundwater sweep and also proposing to mine in a new zone? Please revise the schedule to accurately reflect the 2010 water balance. (PCR)
- Page OP-4. The text describes groundwater restoration as concurrent with mining but also deferred due to mining in adjacent mine units and also designed to achieve the fastest restoration possible given the ability of the aquifer to yield water. These limitations on restoration are not considered reasons to delay restoration. CR will need to demonstrate that there is a balance of the water usage for mining and restoration. The reviewer summarized the changes between the approved permit schedules and the proposed schedules (see the Attachment to comments). In summary, the restoration time has been extended in eight wellfields from 2 to 16 years and has been reduced in four wellfields from 2 to 5 years. CR will need to provide detailed justification for extending the period of restoration in the eight wellfields. It is recommended that CR meet with LQD to discuss the proposed delay in restoration. Further reviews could potentially delay the approval of the revised schedule. (PCR)
- 17 Attachment 2, Mine Unit Extraction Rates and Poor Volumes will need to be revised to reflect the updated water balance and schedule. (PCR)
- CR will need to place a high priority on completing the restoration schedule changes as the approved schedule has errors which must be corrected as soon as possible (i.e., MU-K is included under the wrong permit). It is recommended that CR schedule a meeting to discuss the concerns with the restoration schedule in effort to accelerate the approval of the revision. (PCR)
- Page OP-4. The text describes the projected schedule in Attachment 3. It should reference Attachment 1. Please correct the text. (PCR)

TFN 5 1/119, Restoration Plan Revision Permit 603, Cameco Resources Page 4

Please continue to carry Wellfields A, B and Consherestoration schedule and show the current phase of restoration. The restoration schedule should also show stability monitoring, and wellfield reclamation for a clear understanding of the bond required through the life of mine. (PCN)

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TFN 5 1/119, 72 REVIEW, ATTACHMENT

PERMITS 603 & 633, CAMECO RESOURCES

COMPARISON OF GROUNDWATER RESTORATION SCHEDULES (APPROVED/PROPOSED)

WELLFIELDS	APPROVED PERMIT		PROPOSED	SCHEDULE	CHANGE
	GWS	RO	GWS/RO	REDUCTANT	
MU-A					Waiting
MU-B					Waiting
MU-C		2008			Waiting
MU-D	2010	2010	2010	2015	+5 yrs
MU-Dext	2010	2010	2010	2012	+2 yrs
MU-E	2010	2013	2010	2018	+5 yrs
MU-F	2011	2013	2018	2026	+13 yrs
MU-H	2013	2016	2026	2028	+16 yrs
MU-I	2013	2016	2028	2031	+15 yrs
MU-J	2018	2020	2031	2033	+13 yrs
MU-K	2020	2023	2019	2021	-2 yrs
MU-1	2008	2010	2008	2010	-5 yrs
MU-2	2014	2020	2013	2015	4 yrs
MU-3	2014	2020	2015	2016	-3 yrs
MU-4	2009	2016	2010	2013	+7 yrs
MU-15	2010	2012	2016	2019	No change
MU-ISA	2016	2019	2018	2019	No change
MU-9			2021	2023	······································



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Dave Freudenthal, Governor

John Corre, Director

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P.O. Box 1210 Glenrock, WY 826			3	48	
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revision CRWIII r groundwater Iris review. Full large of infrastructure.	vith the extended tip need to provide just recommended that recommended that recommended that are installation and	ification for this pi CR schedule a mle lelay for correstly replacement well.	roposed time ex eithe With LOD producing well a tild base bas	fensjöh tölre to discuss ti	estore the the enclosed interests.
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cc: Joe Brister	, Cameco Resource	s, Cheyenne, WY			
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CAMECO RESOURCES, HIGHLAND URANIUM PROJECT, PERMIT 633

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Therefore, the following review includes a review of the responses as well as new comments to address the revised proposal.

COMMENTS

P #34.

- Response Net Acceptable. The response discusses the short term disposal capacity issues that resulted in delays in restoration of the current wellfields that are in restoration, but does not explain the long delays for currently producing wellfields. The maintenance, infrastructure installation and replacement wells would have been incorporated into the present schedule and therefore not affect the timelines. Please provide justification for changing the start of restoration and for extending the length of time for restoration. (SI)
- 2 Response Acceptable. The thirelines now match. (SI)
- Response Not Acceptable. The pre-restoration phase needs to have a separate time bar.

 Please include a pre-restoration time bar on Attachment 1. (SI)
- Response Not Acceptable. The water balance in Attachment 3 only lists RO Reject and Post Production MU Control. Please include groundwater sweep in the water balance.

 (SI)
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TFN 5 3/121 Restoration Plan Revision Permit 633, Cameco Resources Page 2

- Please show the pre-conditioning phase time bar on Attachment 1 and add additional discussion of the wellfield preparation activities to the text. (SI)
- 6 Response Acceptable. (SI)

7 Response Acceptable. (SI) A the second color was the contraction for groundwaters on master in most in field, the proposal to more in a different zone

11 35 35 c

8 Response Acceptable. (SI) current as possible for approval. Please residence checkers.

NEW COMMENTS

- Page 6-2A, second complete paragraph. The text uses the term "RTVs" Please define the action with in the text in (PCR) year normal schedules and the proposed schedules use the companies the estimate the proposed schedules are the companies.
- Page RP-7. The revised text describes the progressive change-over to textoration whereby portions of a wellfield may be brought into restoration at any one time. CR will need to clearly describe the transition from production to restoration in the text, i.e., how long it will take to convert a wellfield to full restoration from production? Is this considered the pre-restoration period? How is the "end of injection" water quality average for the wellfield derived if the entire wellfield is not sampled at the same time? At what point does CR declare the wellfield is in restoration for the beginning of active restoration stimpling (i.e., every two months for conductivity, charide and uranium?). Please provide a detailed discussion of the transition from production to groundwater restoration in the text of the approved schedule has errors which must be content of as young a cost that
- Page 6-2A & 6-2B: The proposal describes the restoration well pattern in contrast to the production pattern as considerably different. CR must provide a typical restoration wellfited pattern which includes an average number of additional restoration wells necessary to complete restoration. LQD needs assurance that the surety covers an average number of new restoration wells to complete groundwater restoration of all mining units for the life of mine. (PCR)
- Page 6-2A, second paragraph. CR states that a ground water restoration plan for a mine unit will be developed prior to starting the restoration activities. CR should provide this plan to the LQD. Please add the commitment to develop a detailed restoration plan for the mine units for LQD review and approval. NOTE: LQD is currently reviewing the notifications for initiation of groundwater sampling for restoration for MUs D and E and will be sending a letter with recommendations for the information needed in the wellfield restoration plans. (FCR)
- Attachment 1, Restoration Schedule shows a time bar for the addition of bioremediation/chemical reductant. Please include the water consumption for this phase in the water balance. (PCR)

TFN 5 3/121, Restoration Plan Revision Permit 633, Cameco Resources Page 3

- Attachment 3,2010 Projected Water Balance. The water balance and restoration schedule are based on updated estimated calculations submitted in September of 2010. The original senedule was proposed in August 2009. LQD cantinues to have comments which will likely require further changes to the schedule (i.e., groundwater sweep estimates and reductant estimates). In addition, the disposal capacity is incorrect due to delays in completion of new disposal wells. Other changes such as Mine Units schedule for groundwater sweep is in question in lieu of the proposal to mine in a different zone. The schedule should be as current as possible for approval. Please revise the schedule to accurately reflect the 2010 water balance: (PCR)
- Page 3-8. The revised text describes groundwater restoration could take up to sixteen years. This is a drastic change from the approved text. The reviewer summarized the changes between the approved permit schedules and the proposed schedules (see the Attachment to comments). In summary, the restoration time has been extended in eight wellfields from 2 to 16 years and has been reduced in four wellfields from 2 to 5 years. CR will need to provide detailed justification for extending the period of restoration in the eight wellfields. It is recommended that CR discuss the justification with LQD for a clear understanding of the intent of the delay. Further reviews could potentially delay the approval of the revised schedule. (PCR)
- Attachment 2, Mine Unit Extraction Rates and Poor Volumes will need to be reflect the updated water balance and schedule. (PCR)
- CR will need to place a high priority on completing the restoration schedule changes as the approved schedule has errors which must be corrected as soon as possible (i.e., MU-9) is not shown on the Permit 633 restoration schedule and MU-K is included under the wrong permit). It is recommended that CR schedule a meeting to discuss responses to comments in effort to accelerate the approval of this revision. (PCR)

TFN 5 3/121, T2 REVIEW, ATTACHMENT

PERMITS 603 & 633, CAMECO RESOURCES

COMPARISON OF GROUNDWATER RESTORATION SCHEDULES (APPROVED/PROPOSED)

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WELLFIELDS	APPROVED	PERMIT	PROPOSED	SCHEDULE	CHANGE
	GWS	RO	GWS/RO	REDUCTANT	
MU-A					Waiting
MU-B			Control of the contro		Waiting
MU-C		2008			Waiting
MU-D	2010	2010	₹ ₹ 2010 :	2015	+ 5 yrs
MU-Dext	2010	2010	2010	2012	+2 yrs
MU-E	. 2010	2013 ≘ 🦸	2010	2018	+5 yrs
MU-F	± 2011	2013 ≥ 2013	2018	2026	+13 yrs
MU-H	2013		2026	2028	+16 yrs
MU-I	2013	2016	₹ 5 2028	2031.	+15 918
MU-J	2013	2020	2031	2033	+13 yrs
MU-K	2020	2023	2019	2021	-2 yrs
MU-1	2008		5 £ 2008 €	2010;	-5 yrs
MU-2	2014	2020	± ± 2013 €	2015	4 970
MU-3	2014		2015 ₹ 2015	2016	3 yrs
MU-4	2009		2010	2013	+7 yrs
MU-15	2010		2016	2019	No change
MU-15A	2016		2018	2019	No change
≨ MU-9	71		2921	2023	, , , , , , , , , , , , , , , , , , ,

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