EPA-1239

Reid Rosnick/DC/USEPA/US
10/04/2011 10:22 AM

To Susan Stahle
cc Raymond Lee, Tom Peake
bcc Jonathan Edwards, Alan Perrin
Subject Housekeeping

Hi Sue,

I know you're busy with all sorts of projects (my favorite has been the MBTA), and I hate to bug you about this, but I'm looking at my current schedule for the Subpart W rule, and I have November 16 as the date for the FAR. I'm getting to the commit zone for that date. The reason is that after I receive your comments, I will make changes, and then I have to get it to the workgroup for their review, which leads to sending the preamble/rule to the AAs/RAs for their review before the FAR meeting. Currently I only have about 6 weeks left to do that before the FAR meeting, which puts me close to not having enough time for all those things to happen before the meeting. I suspect that I will have to change the date of the FAR meeting (and that's OK, no pressure :), but in order to be able to request a reasonable date for the FAR could I get some input from you on how long it might take to get your comments to me? This way I can be reasonably certain that the date won't have to be changed again. If you have any sort of date you could give me for your review, I can then do the math to get us to the FAR meeting. Thank you Sue.

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
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1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-1992

Jonathan Edwards/DC/USEPA/US

10/04/2011 10:34 AM

To Reid Rosnick

cc

bcc

Subject Fw: Housekeeping

Thanks Reid....appreciate your careful eye on the calendar. ---Jon

----- Forwarded by Jonathan Edwards/DC/USEPA/US on 10/04/2011 10:33 AM -----

From:	Reid Rosnick/DC/USEPA/US
To:	Susan Stahle/DC/USEPA/US@EPA
Cc:	Raymond Lee/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date:	10/04/2011 10:22 AM
Subject:	Housekeeping

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EPA-2244

Susan Stahle/DC/USEPA/US	To	Reid Rosnick
10/04/2011 05:29 PM	cc	Raymond Lee, Tom Peake
	bcc	
	Subject	Re: Housekeeping

I understand. I'm going to do my best to get through this package on Friday so I can get my comments back to you either that same day or early next week. Of course I must caveat that substantially as it seems I cannot avoid the emergency projects that keep popping up (like the MBTA issue), which unfortunately derail my best of intentions at times, but this is my current game plan.

Susan Stahle
Air and Radiation Law Office (Rm 7502B)
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Washington, D.C. 20460
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fax: (202) 564-5603
stahle.susan@epa.gov

Reid Rosnick Hi Sue, I know you're busy with all sorts... 10/04/2011 10:22:22 AM

From: Reid Rosnick/DC/USEPA/US
To: Susan Stahle/DC/USEPA/US@EPA
Cc: Raymond Lee/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 10/04/2011 10:22 AM
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EPA-4824

Susan Stahle/DC/USEPA/US		To	Reid Rosnick
10/04/2011 05:29 PM		cc	Raymond Lee, Tom Peake
		bcc	
		Subject	Re: Housekeeping

I understand. I'm going to do my best to get through this package on Friday so I can get my comments back to you either that same day or early next week. Of course I must caveat that substantially as it seems I cannot avoid the emergency projects that keep popping up (like the MBTA issue), which unfortunately derail my best of intentions at times, but this is my current game plan.

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fax: (202) 564-5603
stahle.susan@epa.gov

Reid Rosnick   Hi Sue, I know you're busy with all sorts...   10/04/2011 10:22:22 AM

From: Reid Rosnick/DC/USEPA/US
To: Susan Stahle/DC/USEPA/US@EPA
Cc: Raymond Lee/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 10/04/2011 10:22 AM
Subject: Housekeeping

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EPA-3399

Andrea Cherepy/DC/USEPA/US		To	Dennis OConnor
10/20/2011 01:15 PM		cc	Charlotte Mooney, Jed Harrison, Tom Peake
		bcc	
		Subject	Re: Tribal meetings

Dennis,

You are referring to the Uranium Contamination Stakeholder Workshop scheduled for November 8 - 10 in Farmington, NM. RPD contributes approximately $5K annually to this joint workshop. Here's a link to the flyer: http://www.epa.gov/region9/superfund/navajo-nation/workshop/Final-UcswFlyer9_11.pdf

Activity: Uranium Contamination Stakeholders Workshop

Tribes targeted: Navajo and Hopi

Meeting and Anticipated Results: ORIA, in partnership with EPA R9 and the Navajo Nation EPA, Hopi and other federal agencies will host a workshop that addresses the problems of radiation contamination on Indian Lands. EPA staff will likely give presentations on upcoming regulatory activities associated with Clean Air Act 40 CFR Part 61, Subpart W uranium mill tailings radon emissions and the Uranium Mill Tailings Radiation Control Act (UMTRCA) regulation at 40 CFR Part 192. Partnering with other Federal agencies, the Navajo Nation EPA and Hopi allows us to leverage resources and provides a forum for presenting important information to tribes.

Please let me know if you need additional information.
- Andrea

Andrea Cherepy | U.S. Environmental Protection Agency | Radiation Protection Division | Tel 202 343 9317 | cherepy.andrea@epa.gov

Dennis OConnor   We have a rush request to identify up...   10/20/2011 12:56:50 PM

From: Dennis OConnor/DC/USEPA/US
To: Andrea Cherepy/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA, Charlotte Mooney/DC/USEPA/US@EPA
Cc: Jed Harrison/LV/USEPA/US@EPA
Date: 10/20/2011 12:56 PM
Subject: Tribal meetings

We have a rush request to identify upcoming Tribal Activities (see note below)

I know you have a meeting with the Navajo on uranium mining waste.

Could Jed and I get a couple of sentences explaining the meeting and anticipated results.

Tom: Is there anything else which should be highlighted?

Charlotte: Does IED have anything? Frankly I am not aware of anything.

You see that we need this ASAP.

From: Michelle DePass
Sent: 10/20/2011 11:27 AM EDT
To: Assistant Administrators; Regional Administrators; Lisa Garcia; Bob Sussman; Lawrence Elworth; Janet Woodka
Cc: Barry Breen; Beth Craig; Beverly Banister; Bharat Mathur; Brenda Mallory; Carol Rushin; CarolAnn Siciliano; Catherine McCabe; Charles Lee; Chris Hoff; David Guest; Fred Hauchman; George Pavlou; Ira Leighton; Janet McCabe; Jeff Besougloff; Keith Takata; Lawrence Starfield; Louise Wise; Maryann Froehlich; Marylouise Uhlig; Michael Stahl; Michelle Pirzadeh; Mike Shapiro; Nancy Wentworth/DC/USEPA/US@EPA; Steve Tuber; Susan Hazen/DC/USEPA/US@EPA; William Rice/RGAD/R7/USEPA/US@EPA; JoAnn Chase; Karin Koslow
Subject: Quick Turnaround Request from the White House - Activities with Tribal Nations

This is a follow up to an item I mentioned during this week's Senior Staff. We have a quick turn around request from the White House to help support the roll-out of the President's Annual Tribal Nations Conference, which will be held in early December (official announcement is expected next week). The White House is interested in knowing about all Agency activities (grants, policies, events, program roll-outs, etc) that are planned for late November/December that are directly related to Indian country. They hope to coordinate messages and cross-promote where possible.

Please complete the attached template for your Region and submit to Karin Koslow no later than noon tomorrow (Friday, October 21st). In recognition of the short turn around time, all agencies are being asked to submit what they have available by tomorrow, and we have been given the opportunity to update this matrix in the near term - look for an additional request next week.

I will be sending a second request within the next day or so, as the White House will be seeking our input into updating the Progress Report they are issuing at the December Tribal Nations Conference (due Wednesday, October 26). Karin will be the point of contact for responding to that request as well.

Thank you so much for helping ensure all of the excellent work you are doing in Indian country and with tribal governments is being recognized and promoted.
Michelle

Dennis O'Connor
Senior Policy Advisor
Office of Radiation and Indoor Air
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington DC, 20460
Mail Code: 6601J

Delivery Address

1310 L Street NW
Washington, DC 20005
Room 448
202-343-9213

EPA-2777

Reid Rosnick/DC/USEPA/US
10/27/2011 09:46 AM

To Vickie Reed
cc
bcc
Subject Re: Draft Proposal

Thanks, Vickie.

My FAX is 202-343-2304

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

Vickie Reed Reid, at a glance I see some edits nee... 10/27/2011 08:08:08 AM

From: Vickie Reed/DC/USEPA/US
To: Reid Rosnick/DC/USEPA/US@EPA
Date: 10/27/2011 08:08 AM
Subject: Re: Draft Proposal

Reid, at a glance I see some edits needed. What is your fax #, once I finished I'll fax mark up and drop an email to let you know.

For Pouch Mailing Send to:

Vickie Reed
Office of Policy
Regulatory Management Division
Mail Code 1803A
1200 Pennsylvania Ave., NW
Washington, DC 20460

For UPS overnight Mail send to:

Vickie Reed
Office of Policy
1200 Pennsylvania Ave., NW
Room 3512 Ariel Rios Building
Washington, DC 20004

Phone: (202) 564-6562
Fax: (202) 564-7322

Reid Rosnick Hi Vickie, As we discussed, here is a dr... 10/27/2011 07:59:36 AM

From: Reid Rosnick/DC/USEPA/US
To: Vickie Reed/DC/USEPA/US@EPA
Date: 10/27/2011 07:59 AM

Subject: Draft Proposal

Hi Vickie,

As we discussed, here is a draft proposal for revisions to 40 CFR 61, NESHAP Subpart W. We anticipate FAR in mid-December, but I greatly appreciate any review you can make on the document. Thank you.

Reid

[attachment "Draft Outline FR Proposal for Revision of Subpart W Rev 1.docx" deleted by Reid Rosnick/DC/USEPA/US]

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rosnick.reid@epa.gov

EPA-2781

Raymond Lee/DC/USEPA/US
10/27/2011 12:14 PM

To Reid Rosnick
cc Tom Peake
bcc
Subject FAR Date (and other milestones) for NESHAP Subpart W

Hi Reid,

Just wanted to let you know I pushed the FAR date to 12/15/11, per your instructions, and also moved the subsequent milestones about a month or a month and a half out. Let me know if you guys need to make any further changes.

Thanks!

Ray

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.g

EPA-5538

Tom Peake/DC/USEPA/US

10/27/2011 12:33 PM

To Lee.Raymond

cc

bcc

Subject Re: FAR Date (and other milestones) for NESHAP Subpart W

Ray,
We'll need to do something similar for the 192 rule. Did Andrea talk to you about changing dates?

Tom Peake
Director
Center for Waste Management and Regulations
US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

Raymond Lee Hi Reid, Just wanted to let you know I p... 10/27/2011 12:14:29 PM

From: Raymond Lee/DC/USEPA/US
To: Reid Rosnick/DC/USEPA/US@EPA
Cc: Tom Peake/DC/USEPA/US@EPA
Date: 10/27/2011 12:14 PM
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Thanks!

Ray

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

EPA-2801

Deborah Lebow-Aal/R8/USEPA/US

10/27/2011 04:19 PM

To Reid Rosnick, Angelique Diaz

cc

bcc

Subject Fw: Press Release: EPA Issues Conditional Piñon Ridge Mill Approval and Requires Further Federal Reviews

Reid, thought you'd be interested in Sheep Mountain's press release on Pinon Ridge, since a lot of this is about the Subpart W lawsuit.

Deborah Lebow Aal
U.S. Environmental Protection Agency
Region 8 Air Program
Unit Chief, Indoor Air, Transportation and Toxics Unit
1595 Wynkoop Street
Denver, CO 80202
(303) 312-6223

----- Forwarded by Deborah Lebow-Aal/R8/USEPA/US on 10/27/2011 02:18 PM -----

From: "KOTO News" <news@koto.org>
To: Deborah Lebow-Aal/R8/USEPA/US@EPA
Date: 10/27/2011 01:58 PM
Subject: FW: Press Release: EPA Issues Conditional Piñon Ridge Mill Approval and Requires Further Federal Reviews

---

From: Jennifer Thurston [mailto:jennifer@sheepmountainalliance.org]
Sent: Thursday, October 27, 2011 1:48 PM
To: Jennifer Thurston
Subject: Press Release: EPA Issues Conditional Piñon Ridge Mill Approval and Requires Further Federal Reviews

FOR IMMEDIATE RELEASE:
Oct. 27, 2011

Contact: Jennifer Thurston, Sheep Mountain Alliance, 212-473-7717
Travis Stills, Energy Mineral Law Center, 970-259-8046

EPA Issues Conditional Piñon Ridge Mill Approval and Requires Further Federal Reviews

(TELLURIDE, Colo.) – The U.S. Environmental Protection Agency issued a conditional approval on Wednesday to Energy Fuels, Inc.'s proposal to construct the radioactive tailings impoundment for the proposed Piñon Ridge Mill in Paradox Valley.

The conditional approval requires Vancouver-based Energy Fuels to submit a comprehensive ground and surface water-monitoring plan, subject to additional EPA review. The water plan remains subject to additional EPA and state reviews and approval.

"Our concern with the 40-acre tailings impoundment and 30-acre evaporation pond at the Piñon Ridge Mill location continues to be the great risk to the Dolores River watershed and the contamination of the ground water in Paradox Valley," said Hilary White, executive director of Sheep Mountain Alliance. "Energy Fuels still has not submitted final, detailed construction plans for the tailings ponds to any agency and hasn't demonstrated that they can prevent leaks and radioactive, toxic chemical, and heavy metal contamination of the watershed."

The EPA issued the permit to Energy Fuels under admittedly outdated federal radon regulations. Those regulations were successfully challenged in court. The case settled in 2009 based on an EPA agreement to bring the regulations into compliance with the Clean Air Act. A preliminary draft is expected in January 2012. The current 1980s-era radon regulations contain no monitoring requirements and no emissions-reduction technologies, only a 40-acre limitation on size. Sheep Mountain Alliance opposed the issuing of the EPA's NESHAP Subpart W permit during the comment period based on the outdated regulations and the rulemaking process in place to update them.

"Although we are disappointed with the EPA's decision to proceed under the outdated radon regulations, we appreciate that they opted to make this approval conditional and required further review," White said. "We continue to have serious concerns about the Piñon Ridge Mill being permitted under rules that do not satisfy the Clean Water Act."

The EPA's conditional approval falls a week after a federal judge ordered the U.S. Department of Energy to conduct a full analysis on many of the leased uranium mines that are expected to supply the Piñon Ridge Mill in the future. EPA was identified as one of the agencies with a mandatory duty to participate in the DOE-led analysis.

Energy Fuels must still obtain air emissions and groundwater permits from the Colorado Department of Public Health and Environment before it can construct the mill. Sheep Mountain Alliance has challenged the state license issued for the mill in March 2011 and has intervened in a water rights case which would supply the water necessary to operate the mill.

"Energy Fuels has still not demonstrated that it can build the mill safely and in a way that will protect the environment," said White. "Not only do they lack the state permits needed, they continue to lack financing for the mill in the midst of depressed uranium prices. It is unlikely that this mill will ever be economically viable."

EPA-1795

Reid Rosnick/DC/USEPA/US		To	Susan Stahle
11/02/2011 12:50 PM		cc	
		bcc	
		Subject	Subpart W

Hi Sue,

Can you give me an estimate of when you will complete review of the Subpart W preamble? I know that we will be adding time for you to complete your legal analysis, but I'm trying to get a handle on when I can get a revised version out to the workgroup so we can get their review underway and hopefully get to FAR in about 6 weeks. Thanks!

Reid

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U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-4741

Wendy Blake/DC/USEPA/US

11/02/2011 04:09 PM

To Susan Stahle

cc

bcc

Subject Accepted: Subpart W follow-up - options for satisfying section 112(q)(1) review requirement

EPA-1796

Susan Stahle/DC/USEPA/US		To	Reid Rosnick
11/02/2011 05:24 PM		cc	
		bcc	
		Subject	Re: Subpart W

I'm about halfway through the package and so I should be able to finish my review on Friday (I'm out tomorrow). I can then get you comments back on this latest version and let you send that out to the workgroup for their comments. I can indicate placeholders where I want to include more legal discussion, but that should not hold up review by the workgroup.

I've scheduled a meeting with Wendy for Monday to talk further about the legal aspects we need to nail down so I can add that additional legal discussion to the package. I can work on that separately from you finalizing other details with the workgroup.

Susan Stahle
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fax: (202) 564-5603
stahle.susan@epa.gov

Reid Rosnick Hi Sue, Can you give me an estimate of... 11/02/2011 12:50:22 PM

From: Reid Rosnick/DC/USEPA/US
To: Susan Stahle/DC/USEPA/US@EPA
Date: 11/02/2011 12:50 PM
Subject: Subpart W

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EPA-4744

Susan Stahle/DC/USEPA/US		To	Reid Rosnick
11/02/2011 05:24 PM		cc	
		bcc	
		Subject	Re: Subpart W

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From: Reid Rosnick/DC/USEPA/US
To: Susan Stahle/DC/USEPA/US@EPA
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EPA-2751

Reid Rosnick/DC/USEPA/US		To	Tom Peake
11/02/2011 08:04 PM		cc	
		bcc	
		Subject	Fw: Re: Subpart W

FYI

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Radiation Protection Division (6608J)
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1200 Pennsylvania Ave., NW
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202.343.9563
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-----Forwarded by Reid Rosnick/DC/USEPA/US on 11/02/2011 08:04PM -----

To: Reid Rosnick/DC/USEPA/US@EPA
From: Susan Stahle/DC/USEPA/US
Date: 11/02/2011 05:24PM
Subject: Re: Subpart W

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Reid Rosnick---11/02/2011 12:50:22 PM---Hi Sue, Can you give me an estimate of when you will complete review of the Subpart W preamble? I kn

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rosnick.reid@epa.gov

EPA-4791

Susan Stahle/DC/USEPA/US
11/07/2011 11:26 AM

To Wendy Blake
cc
bcc
Subject subpart W meeting pushed into next week

Hi - I scheduled the meeting with Patricia for next week because I couldn't find anything available tomorrow and from her calendar it looks like she is out Wednesday and Thursday.

Susan Stahle
Air and Radiation Law Office (Rm 7502B)
Office of General Counsel
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fax: (202) 564-5603
stahle.susan@epa.gov

EPA-4789

Wendy Blake/DC/USEPA/US

11/07/2011 11:32 AM

To Susan Stahle

cc

bcc

Subject Accepted: Subpart W review - discuss section 112(q) and section 112(c)(4) legal questions

EPA-4777

Patricia Embrey/DC/USEPA/US

11/07/2011 11:32 AM

To Susan Stahle

cc

bcc

Subject Accepted: Subpart W review - discuss section 112(q) and section 112(c)(4) legal questions

EPA-4578

Raymond Lee/DC/USEPA/US		To	Daniel Schultheisz
11/07/2011 12:20 PM		cc	
		bcc	
		Subject	NESHAPS Subpart W -- Current Dates

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

----- Forwarded by Raymond Lee/DC/USEPA/US on 11/07/2011 12:20 PM -----

EPA Priority Action Milestone

Action Title: **NESHAP Amendments for Operating Uranium Mill Tailings (Subpart W) (SAN 5281)**
Full Title: NESHAP Subpart W: Standards for Radon Emissions From Operating Uranium Mill Tailings: Review

Milestone: FAR

Stage:	NPRM	AA Approved Action:	,
Projected Date:	12/15/2011; Thursday	OPEI Reviewed Action:	,
OMB Significance for :	Significant (OMB Confirmed)	Discussed on:	08/01/2011
Milestone Mgmt Level:	YELLOW		

Overarching Action

Initiating Office:	OAR / ORIA/RPD	**Contact:**	Reid Rosnick, 202-343-9563
Action Type:	Regulation	**Management Level:**	YELLOW
SAN:	SAN 5281		
RIN:	RIN: 2060-AP26		
Tier:	Tier 2		
Current Stage:	NPRM		

Chemicals/Contaminants: Uranium

Action Abstract:
NESHAP Subpart W protects human health and the environment by setting radon emission standards and work practices for operating uranium mill tailings impoundments. The Clean Air Act Amendments of 1990 require EPA to review and revise the NESHAP requirements every ten years. We are in the process of entering into a Consent Decree with two Colorado environmental groups that prescribes when the proposed and final standard will be produced because the Agency missed the ten year requirement. In the process of reviewing the status of uranium milling facilities, it became clear that a new type of process had taken over as the major type of uranium recovery. That type is in situ leach (ISL) uranium recovery. The facilities would fall under our regulation by utilizing impoundments that store tailings. Most if not all of these eight facilities(although at least 10 more operations are expected) are not in compliance

with the existing standard. We are involved in a complicance effort with OECA to determine the size and scope of the issue. These facilities also have NRC (or Agreement State) operating licenses, and UIC permits from EPA or authorized states.

Milestones:

Stage	Milestone	Date	Comment
NPRM	Preliminary Analytic Blueprint	01/22/2009 completed	ADMIN COMMENT: Circulated through workgroup and ORIA OD.
NPRM	Early Guidance	04/09/2009 completed	
NPRM	Detailed Analytic Blueprint	06/08/2009 completed	
NPRM	Option Selection	06/30/2011 completed	
NPRM	FAR	12/15/2011 projected	
NPRM	OMB Review (Prog Office to OP)	01/20/2012 projected	
NPRM	Administrator's Signature (Prog Office to OP)	02/29/2012 projected	
Final Action	Administrator's Signature	Long-term	

Deliberative...Not Agency Policy...Do Not Quote, Cite or Distribute

EPA-1053

"Paulson, Oscar (RTE)" <Oscar.Paulson@riotinto.com>

11/08/2011 10:52 AM

To Reid Rosnick

cc "Sweeney,Katie"

bcc

Subject S. Cohen and Associates Report

Reid Rosnick:

When will the S. Cohen and Associates report be available? I have not seen it on the Subpart W web page. Based on discussions during the conference call on Thursday, October 6, 2011, I was under the belief that it would be available by now.

Thank you!

Oscar Paulson

Facility Supervisor
Kennecott Uranium Company
Sweetwater Uranium Project
P.O. Box 1500
42 Miles Northwest of Rawlins
Rawlins, Wyoming 82301-1500

Telephone: (307)-324-4924
Fax: (307)-324-4925
Cellular: (307)-320-8758

E-mail: oscar.paulson@riotinto.com

EPA-2086

Reid Rosnick/DC/USEPA/US		To	"Paulson, Oscar (RTE)"
11/09/2011 08:08 AM		cc	"Sweeney,Katie"
		bcc	
		Subject	Re: S. Cohen and Associates Report

Hello Oscar,

We are wrapping up the internal review, I hope to have it posted on the website by the end of the week.

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

"Paulson, Oscar (RTE)" Reid Rosnick: 11/08/2011 10:52:36 AM

From: "Paulson, Oscar (RTE)" <Oscar.Paulson@riotinto.com>
To: Reid Rosnick/DC/USEPA/US@EPA
Cc: "Sweeney,Katie" <KSweeney@nma.org>
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Rawlins, Wyoming 82301-1500

Telephone: (307)-324-4924
Fax: (307)-324-4925
Cellular: (307)-320-8758

E-mail: oscar.paulson@riotinto.com

EPA-984

EAS.System@EPA

11/09/2011 05:16 PM

To Reid Rosnick

cc

bcc

Subject EAS Document Notification: For your reference: Award: EP-D-10-042/2-03

```
Award: EP-D-10-042/2-03 has been approved by Matt Courtad in EAS.
Modification: 000002
Description: Technical/Regulatory Support for Subpart W of NESHAPS
Owner: Valerie Daigler
Contract Specialist: Nnenna Njoku
Contracting Officer: Matt Courtad
Project Officer: Valerie Daigler
Site: OAR/ORIA
Contracting Office: RTPPOD
```

EPA-3856

Daniel Schultheisz/DC/USEPA/US

11/10/2011 03:24 PM

To Tom Peake

cc Lee.Raymond, Brian Littleton, Reid Rosnick, Andrea Cherepy

bcc

Subject Re: Mike's Request--changing dates

I told Alan yesterday that we would need to think about what dates to put in. We don't want to push them too far, but we also don't want to keep changing them. So we need something realistic.

Tom Peake Dan, In this document we need to mov... 11/10/2011 01:48:31 PM

From: Tom Peake/DC/USEPA/US
To: Daniel Schultheisz/DC/USEPA/US@EPA
Cc: Lee.Raymond@epamail.epa.gov, Brian Littleton/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Andrea Cherepy/DC/USEPA/US@EPA
Date: 11/10/2011 01:48 PM
Subject: Re: Mike's Request--changing dates

Dan,
In this document we need to move the 40 CFR 190 dates 12/20 & 12/30 several weeks into January because of the holidays. This means we need to change them in the system to January

Ray,
When you get in next week, will you change the dates for 40 CFR 190?

Also, we will need to move the Subpart W 12/15 date since Sue won't get her stuff in time. Please work with Reid to get a time that we can run by Jon for his agreement.

Then, we need to change the dates in the one-pager to reflect these changes.

Thanks.

Tom Peake
Director
Center for Waste Management and Regulations
US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

Daniel Schultheisz The attached one-pager gives a brie... 11/07/2011 03:12:04 PM

From: Daniel Schultheisz/DC/USEPA/US
To: Jonathan Edwards/DC/USEPA/US@EPA, Alan Perrin/DC/USEPA/US@EPA
Cc: Tom Peake/DC/USEPA/US@EPA
Date: 11/07/2011 03:12 PM
Subject: Mike's Request

The attached one-pager gives a brief status update for the five actions that will need OMB attention. The status statements are brief. It also shows milestone dates for the three regulatory actions, showing how dates have changed. The dates reflect the most recent "old" dates, but it should be noted that both FAR for Subpart W and options selection for Part 192 were originally to be in August. Subpart W FAR was moved to September, then November, and now December because of the need to get OGC input. The signature date for Subpart W is now only about six weeks after submittal to OMB, rather than the usual three months. Ray thinks he did that to keep the schedule from slipping too much, but we should probably extend it to three months since it is our of our hands (especially if OMB is going to limit its reviews in 2012). This would put signature in late April.

Let me know if this looks okay as a starting point and if anything else needs to be done with it.

[attachment "Status on RPD Actions Nov 2011.docx" deleted by Daniel Schultheisz/DC/USEPA/US]

EPA-3466

Daniel Schultheisz/DC/USEPA/US

11/17/2011 11:39 AM

To Andrea Cherepy

cc

bcc

Subject Re: T1 schedules

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Andrea Cherepy The sentence regarding the SAB Rep... 11/17/2011 11:08:46 AM

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Andrea Cherepy | U.S. Environmental Protection Agency | Radiation Protection Division | Tel 202 343 9317 | cherepy.andrea@epa.gov

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Let me know if something looks fishy.

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Dan - I have some other morning & lunch meetings but will be back at my desk in the afternoon for the SCOUT call at 1:00. Otherwise, you can always get at me via e-mail.

Thanks!

Ray

[attachment "190milestones.jpg" deleted by Daniel Schultheisz/DC/USEPA/US]

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

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To: Raymond Lee/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
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[attachment "T1_status_11-11.docx" deleted by Daniel Schultheisz/DC/USEPA/US]

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376

EPA-4579

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~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376
~~~~~~~~~~~~~~~~~~~~

EPA-3408

Daniel Schultheisz/DC/USEPA/US

11/17/2011 11:48 AM

To Andrea Cherepy

cc

bcc

Subject Re: T1 schedules

Good. This was originally requested by Mike so he could understand how things were evolving in anticipation of having to prod OMB.

Andrea Cherepy Understood. I don't know the intended... 11/17/2011 11:46:40 AM

From: Andrea Cherepy/DC/USEPA/US
To: Daniel Schultheisz/DC/USEPA/US@EPA
Date: 11/17/2011 11:46 AM
Subject: Re: T1 schedules

Understood. I don't know the intended audience for this one-pager but I do know that documents have a way of being forwarded on to the masses and used for various drills. Just wanted to make sure that the language was accurate.

I still suggest an edit. How about...

We expect the final draft report from the Science Advisory Board's Radiation Advisory Committee in November.

Andrea Cherepy | U.S. Environmental Protection Agency | Radiation Protection Division | Tel 202 343 9317 | cherepy.andrea@epa.gov

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[attachment "T1_status_11-11.docx" deleted by Daniel Schultheisz/DC/USEPA/US]
~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376
~~~~~~~~~~~~~~~~~~~~

EPA-3869

Daniel Schultheisz/DC/USEPA/US 11/17/2011 11:48 AM	To	Andrea Cherepy
	cc	
	bcc	
	Subject	Re: T1 schedules

Good. This was originally requested by Mike so he could understand how things were evolving in anticipation of having to prod OMB.

Andrea Cherepy Understood. I don't know the intended... 11/17/2011 11:46:40 AM

From: Andrea Cherepy/DC/USEPA/US
To: Daniel Schultheisz/DC/USEPA/US@EPA
Date: 11/17/2011 11:46 AM
Subject: Re: T1 schedules

Understood. I don't know the intended audience for this one-pager but I do know that documents have a way of being forwarded on to the masses and used for various drills. Just wanted to make sure that the language was accurate.

I still suggest an edit. How about...

We expect the final draft report from the Science Advisory Board's Radiation Advisory Committee in November.

Andrea Cherepy | U.S. Environmental Protection Agency | Radiation Protection Division | Tel 202 343 9317 | cherepy.andrea@epa.gov

Daniel Schultheisz The RAC document was the one I w... 11/17/2011 11:39:26 AM

From: Daniel Schultheisz/DC/USEPA/US
To: Andrea Cherepy/DC/USEPA/US@EPA
Date: 11/17/2011 11:39 AM
Subject: Re: T1 schedules

The RAC document was the one I was thinking of, since it is more time-critical for keeping the schedule.

Andrea Cherepy The sentence regarding the SAB Rep... 11/17/2011 11:08:46 AM

From: Andrea Cherepy/DC/USEPA/US
To: Daniel Schultheisz/DC/USEPA/US@EPA
Cc: Raymond Lee/DC/USEPA/US@EPA, Alan Perrin/DC/USEPA/US@EPA, Brian Littleton/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 11/17/2011 11:08 AM
Subject: Re: T1 schedules

The sentence regarding the SAB Report should be edited as follows:

We expect the final report from the Science Advisory Board in ~~November~~January 2012.

It is the RAC quality review document that we hope to see later this month.

Andrea Cherepy | U.S. Environmental Protection Agency | Radiation Protection Division | Tel 202 343 9317 | cherepy.andrea@epa.gov

Daniel Schultheisz Here's a proposed revision based o... 11/17/2011 10:57:57 AM

From: Daniel Schultheisz/DC/USEPA/US
To: Raymond Lee/DC/USEPA/US@EPA
Cc: Alan Perrin/DC/USEPA/US@EPA, Brian Littleton/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA, Andrea Cherepy/DC/USEPA/US@EPA
Date: 11/17/2011 10:57 AM
Subject: Re: T1 schedules

Here's a proposed revision based on conversations with Tom and Reid this morning. Note that the tables now include date for submittal to OP (In SCOUT this appears to be combined with actual OMB submittal). It might take a week or two to clear OP.

The dates for part 190 address two possibilities: 1) we are able to have the "early guidance" meeting (this date in SCOUT is for options selection) in December, or 2) we can't do it until January. Brian has a workgroup meeting today and hopefully we will get some clarification about what OP sees as the purpose of an early guidance meeting. If we need to do one, we'll have to brief Mike and Gina/Jim, so timing will be tight for December. Tom and Jon agreed to put the less optimistic dates in SCOUT, but we will work to improve upon them.

The dates for part 192 have been adjusted to give a bit more time for options selection. We had about seven weeks between FAR and OMB, so have trimmed that to five (which may still turn out to be more than necessary). We also realized that the date for signature in SCOUT should have been August 31, rather than August 3. This puts us right at the edge of September, and we will probably be discouraged from pushing it further.

The dates for subpart W are contingent on assuming the following sequence: 1) Reid circulates revised package to workgroup this week (i.e., tomorrow); 2) comments back from workgroup by December 5 (Monday); 3) final okay from workgroup members December 12; 4) circulation of FAR package by December 16. This gives a bit more than four weeks to the FAR date of January 17, which hopefully will accommodate holiday cheer. Of course we can't keep to this schedule without OGC input, so Sue probably needs to get everything to Reid by the December 5 date.

Let me know if something looks fishy.

[attachment "T1_status_11-17.docx" deleted by Andrea Cherepy/DC/USEPA/US]

Raymond Lee Hi all, Just wanted to piggy-back on Ala... 11/16/2011 06:08:12 PM

From: Raymond Lee/DC/USEPA/US
To: Alan Perrin/DC/USEPA/US@EPA
Cc: Brian Littleton/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 11/16/2011 06:08 PM
Subject: Re: T1 schedules

Hi all,

Just wanted to piggy-back on Alan's message...

Brian, after taking a look at the dates you have in the revised PAB, they are a bit confusing when trying to compare them to what's in our systems. I have attached the current list of milestones in RAPIDS &

SCOUT. To avoid any type of misinterpretation (and since OAR will be targeting these SCOUT dates), we should probably align what we have at the end of the PAB to the exact same milestones we have in our tracking systems.

Since we're still getting these together, the early guidance (11/18) and detailed analytic blueprint (11/29) dates haven't been changed for the SCOUT meeting tomorrow. I'll inform everyone that they'll definitely be pushed out, but we're still awaiting final word from our management on the exact dates.

Dan - I have some other morning & lunch meetings but will be back at my desk in the afternoon for the SCOUT call at 1:00. Otherwise, you can always get at me via e-mail.

Thanks!

Ray

[attachment "190milestones.jpg" deleted by Daniel Schultheisz/DC/USEPA/US]

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

Alan Perrin	Ray, Dan, Here is the "regs" update file...	11/16/2011 05:58:22 PM

From: Alan Perrin/DC/USEPA/US
To: Raymond Lee/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Cc: Brian Littleton/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA
Date: 11/16/2011 05:58 PM
Subject: T1 schedules

Ray, Dan,

Here is the "regs" update file. Dan, I talked to you briefly about this last week and I talked to Ray about it just now; please touch base with each other tomorrow morning. We need to update the file with realistic dates for the 190 and the Subpart W schedules. Also need to modify the 190 language (NRC meeting is now past tense -- may want to delete the reference and replace it with something on the op/ord request for an early guidance meeting). I'm out of the office tomorrow morning, but hope to see the mods by the end of the day. Thanks, Alan

[attachment "T1_status_11-11.docx" deleted by Daniel Schultheisz/DC/USEPA/US]
~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376
~~~~~~~~~~~~~~~~~~~~

EPA-2882

Reid Rosnick/DC/USEPA/US

11/17/2011 02:55 PM

To Susan Stahle

cc

bcc

Subject Subpart W

Hi Sue,

Just want to give you a heads-up in some dates for Subpart W so you can budget for insertion of legal language. (I have been told that these dates cannot slip...boss's orders!)

I'm sending the revised preamble and rule to the workgroup tomorrow. I will be asking for comments back to me by no later than December 5. I will address comments that week, and will schedule a workgroup meeting for December 12. I hope to vote for FAR at the meeting, prepare the rest of the FAR documentation that week, and schedule the FAR meeting for the week of January 17.

Please give me a call if you would like to discuss. Thanks

Reid

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Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
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rosnick.reid@epa.gov

EPA-2810

Reid Rosnick/DC/USEPA/US		To	George Brozowski
11/21/2011 12:25 PM		cc	
		bcc	
		Subject	Re: Comments To Draft Subpart W Preamble and Rule Language

Hi George,

Thanks. The potential site in NM is Crownpoint, a proposed ISL facility that has been the subject of legal action over the past few years. The license expired in 2003, but the company expressed an interest in re-opening. Again, nothing going on yet.

Have a Happy Thanksgiving!

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rosnick.reid@epa.gov

EPA-1263

Reid Rosnick/DC/USEPA/US	To	Raymond Lee
11/22/2011 10:44 AM	cc	
	bcc	
	Subject	Preparing for FAR

Hi Ray,

As you know, I'm preparing for the FAR meeting for Subpart W. Can you tell me who I need to contact in order to coordinate what I need for the meeting? Thanks

Reid

Reid J. Rosnick
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Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-1264

Raymond Lee/DC/USEPA/US

11/22/2011 12:55 PM

To Reid Rosnick

cc

bcc

Subject Re: Preparing for FAR

Hi Reid,

Requesting guidance from the special assistance and immediate office in OAR on the specifics - will get back to you as soon as I hear back. I'm assuming it's similar to the form we filled out for Options Selection.

Thanks,

Ray

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

Reid Rosnick   Hi Ray, As you know, I'm preparing for t...   11/22/2011 10:44:14 AM

From: Reid Rosnick/DC/USEPA/US
To: Raymond Lee/DC/USEPA/US@EPA
Date: 11/22/2011 10:44 AM
Subject: Preparing for FAR

Hi Ray,

As you know, I'm preparing for the FAR meeting for Subpart W. Can you tell me who I need to contact in order to coordinate what I need for the meeting? Thanks

Reid

Reid J. Rosnick
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1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-4997

Alan Perrin/DC/USEPA/US

11/22/2011 11:40 PM

To "Valerie Daigler"

cc "Jonathan Edwards", "Tom Peake"

bcc

Subject Fy12 RP Bud

Val,

We discussed the CWMR budget proposals that required additional info today. The bottom line (for program review pres prep) is that we are taking $25K off of 190 and $25K off of Subpart W. These are off the revised totals that you provided to Jon and me. Thanks, Alan

----

Alan Perrin
EPA Wireless

EPA-1228

Raymond Lee/DC/USEPA/US

11/29/2011 10:41 AM

To Reid Rosnick

cc

bcc

Subject Re: Preparing for FAR

Will do, Reid!

Sent by EPA Wireless E-mail Services

-----Reid Rosnick/DC/USEPA/US wrote: -----
To: Raymond Lee/DC/USEPA/US@EPA
From: Reid Rosnick/DC/USEPA/US
Date: 11/29/2011 10:15AM
Subject: Re: Preparing for FAR

Thanks Ray,

I'll contact her.

I've been reading the ADP guidance, and it says in RAPIDS we should update the workgroup members occasionally. I've attached the most recent list of members, would you please make sure that the RAPIDS list is up to date? Thanks!

Reid

(See attached file: Workgroup Members and Contact Information.docx)

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rosnick.reid@epa.gov

Inactive hide details for Raymond Lee---11/22/2011 04:51:36 PM---Hi Reid, So I've been told that Gina or someone at the AA leveRaymond Lee---11/22/2011 04:51:36 PM---Hi Reid, So I've been told that Gina or someone at the AA level does not normally attend FAR meeting

From: Raymond Lee/DC/USEPA/US
To: Reid Rosnick/DC/USEPA/US@EPA
Date: 11/22/2011 04:51 PM
Subject: Re: Preparing for FAR

Hi Reid,

So I've been told that Gina or someone at the AA level does not normally attend FAR meetings; they are normally scheduled through Wanda Farrar. I would suggest touching base with her (and Tom Eagles if she's not available) to set things up. I've also attached a sample memo that OAQPS did for their FAR meeting as an example.

Thanks!

Ray

(See attached file: FARmemoCISWI.pdf)

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

Inactive hide details for Reid Rosnick---11/22/2011 10:44:14 AM---Hi Ray, As you know, I'm preparing for the FAR meeting for SuReid Rosnick---11/22/2011 10:44:14 AM---Hi Ray, As you know, I'm preparing for the FAR meeting for Subpart W. Can you tell me who I need to

From: Reid Rosnick/DC/USEPA/US
To: Raymond Lee/DC/USEPA/US@EPA
Date: 11/22/2011 10:44 AM
Subject: Preparing for FAR

Hi Ray,

As you know, I'm preparing for the FAR meeting for Subpart W. Can you tell me who I need to contact in order to coordinate what I need for the meeting? Thanks

Reid

Reid J. Rosnick
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rosnick.reid@epa.gov

[attachment "FARmemoCISWI.pdf" removed by Raymond Lee/DC/USEPA/US]
[attachment "Workgroup Members and Contact Information.docx" removed by Raymond Lee/DC/USEPA/US]

EPA-2881

Reid Rosnick/DC/USEPA/US		To	Valentine Anoma
11/29/2011 01:57 PM		cc	
		bcc	
		Subject	Technical Directive

Hi Val,

Could you please give me the status of the technical directive you were preparing for SC&A so they could finish up the work for the Subpart W EIA. I keep getting calls from Harry Pettengill saying he hasn't heard anything. Thanks!

Reid

Reid J. Rosnick
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Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-2837

Reid Rosnick/DC/USEPA/US

12/01/2011 08:08 AM

To Beth Miller

cc

bcc

Subject Subpart W Website

Hi Beth,

When you get a chance there's two dates I need to change on the Subpart W website. Thanks

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-2875

Reid Rosnick/DC/USEPA/US		To	Beth Miller
12/01/2011 09:18 AM		cc	
		bcc	
		Subject	Re: Subpart W Website

Nope, tomorrow is fine...

Reid J. Rosnick
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U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

Beth Miller From: Beth Miller/DC/USEPA/US To: R... 12/01/2011 09:10:31 AM

From: Beth Miller/DC/USEPA/US
To: Reid Rosnick/DC/USEPA/US@EPA
Date: 12/01/2011 09:10 AM
Subject: Re: Subpart W Website

I am off today is tomorrow to late

Beth Miller
202-343-9223

-----Reid Rosnick/DC/USEPA/US wrote: -----

=======================
To: Beth Miller/DC/USEPA/US@EPA
From: Reid Rosnick/DC/USEPA/US
Date: 12/01/2011 08:08AM
Subject: Subpart W Website
=======================

Hi Beth,

When you get a chance there's two dates I need to change on the Subpart W website. Thanks

Reid

Reid J. Rosnick
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1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-2059

Robert Dye/R7/USEPA/US		To	Reid Rosnick
12/01/2011 09:27 AM		cc	
		bcc	
		Subject	Re: Draft Subpart W Preamble and Rule Language

I have reviewed the Preamble and language and have no specific comments. It seems to be much more readable to me. thanks

_____
Bob Dye
Radiation and Indoor Air
EPA Region 7
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7605
fax (913)551-7844
dye.robert@epa.gov

EPA-2824

Reid Rosnick/DC/USEPA/US

12/01/2011 10:11 AM

To Jeffrey Blizzard

cc

bcc

Subject Stuff

Jeff,

Here's the link to the Subpart W website:
http://www.epa.gov/radiation/neshaps/subpartw/rulemaking-activity.html

I'll also forward the work plan, and draft EIA. Any questions, just ask!

Reid

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1200 Pennsylvania Ave., NW
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EPA-2128

Daniel Schultheisz/DC/USEPA/US

12/07/2011 11:56 AM

To Angelique Diaz
cc Susan Stahle, Reid Rosnick, Tom Peake
bcc
Subject Re: Fw: Re: Fw: New Snippet

We have a meeting with our contractors today from 1-2 (hopefully not longer). Reid, Tom, and I should be at that. So if we say 2:30 EST we should be in the window for everyone. Sound okay? With luck it won't take long.

Angelique Diaz	I am available before 1:15pm Eastern T...	12/07/2011 11:45:07 AM

From: Angelique Diaz/R8/USEPA/US
To: Susan Stahle/DC/USEPA/US@EPA
Cc: Reid Rosnick/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 12/07/2011 11:45 AM
Subject: Re: Fw: Re: Fw: New Snippet

I am available before 1:15pm Eastern Time today and tomorrow all day. I work 7am-3:30pm, mountain time.

Angelique D. Diaz, Ph.D.
Environmental Engineer
Air Program, USEPA/Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Office: 303.312.6344
Fax: 303.312.6064
diaz.angelique@epa.gov

Susan Stahle	I'm free from 2-4 pm today and anytime...	12/07/2011 09:34:37 AM

From: Susan Stahle/DC/USEPA/US
To: Reid Rosnick/DC/USEPA/US@EPA
Cc: Angelique Diaz/R8/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 12/07/2011 09:34 AM
Subject: Re: Fw: Re: Fw: New Snippet

I'm free from 2-4 pm today and anytime tomorrow except 2-3 pm.

Susan Stahle
Air and Radiation Law Office (Rm 7502B)
Office of General Counsel
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW (ARN: MC 2344A)
Washington, D.C. 20460
ph: (202) 564-1272
fax: (202) 564-5603
stahle.susan@epa.gov

Reid Rosnick	Me too. When are we available? I'm fre...	12/07/2011 11:22:35 AM

From: Reid Rosnick/DC/USEPA/US
To: Daniel Schultheisz/DC/USEPA/US@EPA
Cc: Angelique Diaz/R8/USEPA/US@EPA, Susan Stahle/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 12/07/2011 11:22 AM
Subject: Re: Fw: Re: Fw: New Snippet

Me too. When are we available? I'm free anytime.

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

-----Daniel Schultheisz/DC/USEPA/US wrote: -----
To: Susan Stahle/DC/USEPA/US@EPA
From: Daniel Schultheisz/DC/USEPA/US
Date: 12/07/2011 10:59AM
Cc: Reid Rosnick/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Subject: Re: Fw: Re: Fw: New Snippet

I'm amenable.

Susan Stahle---12/07/2011 10:50:12 AM---Before looking at the new snippet, or anyone's comments on it, it sounds like a discussion with all

From: Susan Stahle/DC/USEPA/US
To: Reid Rosnick/DC/USEPA/US@EPA
Cc: Angelique Diaz/R8/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 12/07/2011 10:50 AM
Subject: Re: Fw: Re: Fw: New Snippet

Before looking at the new snippet, or anyone's comments on it, it sounds like a discussion with all of us may be worthwhile so that we are all on the same page regarding what you want to do with the package. I also think a discussion is worthwhile to make sure we all have the same understanding regarding what subpart W requires - in other words, I want to ensure we all agree on the interpretation of provisions of the reg text and the original preamble language. I can see Dan and I are reading some language differently and I'd like to make sure that we are all in agreement before proceeding. I think that will be more efficient. Thoughts?

Susan Stahle
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Reid Rosnick---12/07/2011 10:10:52 AM---From: Reid Rosnick/DC/USEPA/US To: Susan Stahle/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA

From: Reid Rosnick/DC/USEPA/US
To: Susan Stahle/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA
Date: 12/07/2011 10:10 AM
Subject: Fw: Re: Fw: New Snippet

I also forwarded the section to Dan, who made some comments, FYI

Reid J. Rosnick
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-----Forwarded by Reid Rosnick/DC/USEPA/US on 12/07/2011 10:10AM -----

To: Reid Rosnick/DC/USEPA/US@EPA
From: Daniel Schultheisz/DC/USEPA/US
Date: 12/07/2011 09:45AM
Cc: Tom Peake/DC/USEPA/US@EPA
Subject: Re: Fw: New Snippet

I have no objection to eliminating the distinction, but some of the language about what is or is not now required needs to be clarified. This was one of the questions I had on the draft, where it said the flux standard is protective if the work practices are followed. Also, I think the proposed change in 61.252(d) (from what is now 61.252(c)) should not be made. It proposes to change the reference to 192.32(a) to 192.32(a)(1), as is being done for the other provisions. If that change is made, the requirement to comply with the groundwater protection provisions will be eliminated (since they are in 192.32(a)(2)).

That's kind of a complicated explanation. Here's a simpler one: As I read 54 FR 51680, the requirement to comply with 192.32(a) in existing 61.252(c) was necessary to have pre-1989 impoundments comply with the groundwater requirements in 192.32(a)(2). Specifically, "all piles will be required to meet the requirements of 40 CFR 192.32(a) *which protects water supplies from contamination*. Under the current rules, existing piles are exempt from these provisions, this rule will end that exemption."

The requirements "which protects water supplies from contamination" is 192.32(a)(2), not 192.32(a)(1). Unless for some reason the "current rules" no longer provide the exemption, the proposed change will remove the requirement for compliance with groundwater provisions.

Attached is a markup of the snippet (and I assume you have added some words to address

Sue's comments). Let me know if you have questions.

(See attached file: 5 djs.docx)

Reid Rosnick---12/07/2011 07:25:23 AM---From: Reid Rosnick/DC/USEPA/US To: Tom Peake/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA

From: Reid Rosnick/DC/USEPA/US
To: Tom Peake/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA
Date: 12/07/2011 07:25 AM
Subject: Fw: New Snippet

Guys,

A new wrinkle...Sue and I have been discussing the possibility of eliminating the distinction conventional impoundments due to the 12/15/89 date, and also eliminating the need for flux monitoring at the older impoundments. I have attached a piece of the preamble that reflects this. It means major changes to the preamble and rule language.

I'm trying to reconcile 5-6 sets of comments as well as adding new language. This is (to quote our old DA) a long, tough slog, but I know I've got to get it done. I'll update you later in the day to let you know if I need to work from home again tomorrow. Call me if you have issues.

Reid

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rosnick.reid@epa.gov

-----Forwarded by Reid Rosnick/DC/USEPA/US on 12/07/2011 07:19AM -----
To: Susan Stahle/DC/USEPA/US@EPA
From: Reid Rosnick/DC/USEPA/US
Date: 12/07/2011 06:49AM
Cc: Angelique Diaz/R8/USEPA/US@EPA
Subject: New Snippet
(See attached file: 5.docx)

Sue,

Attached you will find a portion of the draft preamble that discusses why we should drop the distinction between pre and post 12/15/89 impoundments. I excised a major chunk of the risk assessment section and blended it in with the new idea we discussed. I'd appreciate your comments. I also copied Angelique to make sure that we are technically correct as well as on solid legal grounds. Please let me know what comments you have. I'm working from home today (301-461-3848) if you would like to chat. Thanks

Reid

Reid J. Rosnick
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Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov[attachment "5.docx" deleted by Daniel Schultheisz/DC/USEPA/US] [attachment "5 djs.docx" deleted by Susan Stahle/DC/USEPA/US]

EPA-4452

Daniel Schultheisz/DC/USEPA/US 12/09/2011 10:37 AM	To	Virginia Stradford
	cc	
	bcc	
	Subject	Meeting Request for Gina - Subpart W

Ginny:

Sorry I didn't get this to you yesterday. Let me know if you need more information. Thanks.

Requesting Office: OAR-ORIA-RPD, Jonathan Edwards -- 202-343-9437 (if you think we should list Alan instead, please do)

Event/Meeting: Pre-Brief on Final Agency Review (FAR) meeting for 40 CFR Part 61, Subpart W - National Emission Standards for Radon Emissions from Operating Mill Tailings

Purpose: To update the Assistant Administrator on proposed revisions to Subpart W and issues anticipated to be raised during Final Agency Review

Background: The Radiation Protection Division is proposing revisions to Subpart W. The proposed revisions clarify the application of Subpart W to certain types of facilities managing uranium byproduct material (i.e., non-conventional impoundments and heap leach piles) and propose Generally Available Control Technologies (GACT), including work practices, to limit emissions of radon. These proposed revisions are being developed under a Consent Agreement with Colorado Citizens Against Toxic Waste and Rocky Mountain Clean Air Action.

Date: Week of December 19 (if possible, otherwise as soon as we can)
Time (Duration): 1 hour (we might be able to manage with 30 minutes)
Timing of Administrator's Attendance: Same
Location: No preference

Invites to Mike Flynn, Jonathan Edwards, Alan Perrin, Tom Peake, Reid Rosnick, Dan Schultheisz, Sue Stahle

EPA-4197

Tom Peake/DC/USEPA/US
12/09/2011 01:43 PM

To Daniel Schultheisz, Reid Rosnick
cc Emily Atkinson
bcc
Subject Has meeting with Gina on Subpart W been submitted to Emily?

Hi,
During yesterday's meeting with Mike it sounded to me like Mike wanted to have a short meeting with Gina on Subpart W. Has anybody begun the schedule request process?

I think the hope was to have it during the week of December 19. Just 30 minutes was my interpretation of "a short meeting".

Tom Peake
Director
Center for Waste Management and Regulations
US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

EPA-5560

Tom Peake/DC/USEPA/US

12/09/2011 01:43 PM

To Daniel Schultheisz, Reid Rosnick

cc Emily Atkinson

bcc

Subject Has meeting with Gina on Subpart W been submitted to Emily?

Hi,
During yesterday's meeting with Mike it sounded to me like Mike wanted to have a short meeting with Gina on Subpart W. Has anybody begun the schedule request process?

I think the hope was to have it during the week of December 19. Just 30 minutes was my interpretation of "a short meeting".

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US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

EPA-4198

Daniel Schultheisz/DC/USEPA/US		To	Tom Peake
12/09/2011 01:46 PM		cc	Emily Atkinson, Reid Rosnick
		bcc	
		Subject	Re: Has meeting with Gina on Subpart W been submitted to Emily?

Emily's been out, so I sent the information to Ginny this morning. Asking for the week of the 19th, one hour (but we could probably do with 30 minutes).

Tom Peake   Hi, During yesterday's meeting with Mik...   12/09/2011 01:43:41 PM

From: Tom Peake/DC/USEPA/US
To: Daniel Schultheisz/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA
Cc: Emily Atkinson/DC/USEPA/US@EPA
Date: 12/09/2011 01:43 PM
Subject: Has meeting with Gina on Subpart W been submitted to Emily?

Hi,
During yesterday's meeting with Mike it sounded to me like Mike wanted to have a short meeting with Gina on Subpart W. Has anybody begun the schedule request process?

I think the hope was to have it during the week of December 19. Just 30 minutes was my interpretation of "a short meeting".

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Center for Waste Management and Regulations
US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

EPA-3805

Gina McCarthy/DC/USEPA/US

Sent by: Cynthia Browne

12/09/2011 03:23 PM

To Alan Perrin, Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Mike Flynn, Reid Rosnick, Susan Stahle, Tom Peake

cc Addie Johnson, Cindy Huang, Don Zinger, Joyce Crowley, Kirsten King, Kristina Friedman, Virginia Stradford

bcc

Subject Pre-Brief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings

Revised November 29, 2005

Requesting Meeting with: Gina McCarthy, AA

Date of this Request: December 9, 2011

Point of Contact (Name/Number): Jon Edwards (Acting OD/ORIA) / 343-9320

Title of Meeting: PreBrief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings.

Purpose of Meeting: To update the AA on proposed revisions to Subpart W and issues anticipated to be raised during Final Agency Review.

Status (check one) –X Critical _ Less Immediate

Proposed Date/Last Possible Date: Week of December 19 (if possible; otherwise ASAP as AA's schedule permits).

If the meeting is critical, please explain why: Background: The Radiation Protection Division is proposing revisions to Subpart W. The proposed revisions clarify the application of Subpart W to certain types of facilities managing uranium byproduct material (i.e., non-conventional impoundments and heap leach piles) and propose Generally Available Control Technologies (GACT), including work practices, to limit emissions of radon. These proposed revisions are developed under a Consent Agreement with Colorado Citizens Against Toxic Waste and Rocky Mountain Clean Air Action.

Location of Meeting: AA's office

Length of Meeting: 45 minutes / 1 hr. as AA schedules permits.

Equipment/resources needed:

DATES TO AVOID: December 5 and December 7.

Key Participants:

Office/Organization	Name	Number
ORIA-OD	Mike Flynn	(202) 564-7403
	Anna Duncan	
	Jonathan Edwards	
	Alan Perrin	
	Daniel Schultheisz	
	Reid Rosnick	
	Tom Peake	
	Susan Stahle	

Submitted by: Ginny Stradford (343-9205)

EPA-3400

Reid Rosnick/DC/USEPA/US

12/12/2011 02:18 PM

To Albion Carlson, Andrea Cherepy, Angelique Diaz, Barry Elman, CharlesA Hooper, Charlie Garlow, Daniel Schultheisz, Davis Zhen, George Brozowski, Kenneth Distler, Marilyn Ginsberg, Robert Duraski, Robert Dye, Stephen Hoffman, Stuart Walker, Susan Stahle, Tim Benner, Tom Peake, Valentine Anoma

cc

bcc

Subject Revisions to Subpart W Rule/Preamble Language

Meeting

Date 01/04/2012

Time 11:00:00 AM to 12:00:00 PM

Chair Reid Rosnick

Invitees

Required Albion Carlson; Andrea Cherepy; Angelique Diaz; Barry Elman; CharlesA Hooper; Charlie Garlow; Daniel Schultheisz; Davis Zhen; George Brozowski; Kenneth Distler; Marilyn Ginsberg; Robert Duraski; Robert Dye; Stephen Hoffman; Stuart Walker; Susan Stahle; Tim Benner; Tom Peake; Valentine Anoma

Optional

FYI

Location Call-in number - 866-299-3188

Conference Code 2023439563

EPA-2871

1310L Room 502/DC-1310L-OAR

12/12/2011 02:18 PM

To Reid Rosnick

cc

bcc

Subject Accepted: Revisions to Subpart W Rule/Preamble Language

EPA-5066

Angelique Diaz/R8/USEPA/US
12/12/2011 03:54 PM

To Deborah Lebow-Aal
cc
bcc
Subject Fw: Revisions to Subpart W Rule/Preamble Language

FYI

Angelique D. Diaz, Ph.D.
Environmental Engineer
Air Program, USEPA/Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Office: 303.312.6344
Fax: 303.312.6064
diaz.angelique@epa.gov
----- Forwarded by Angelique Diaz/R8/USEPA/US on 12/12/2011 01:54 PM -----

Revisions to Subpart W Rule/Preamble Language

Wed 12/14/2011 11:00 AM - 12:00 PM

Attendance is for Angelique Diaz

Chair: **Reid Rosnick/DC/USEPA/US**

Location: Call-in number - 866-299-3188 Conference Code 2023439563

Rooms: 1310L Room 502/DC-1310L-OAR@EPA

This entry has an alarm. The alarm will go off   before the entry starts.

Required:	Albion Carlson/R8/USEPA/US@EPA, Andrea Cherepy/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA, Barry Elman/DC/USEPA/US@EPA, CharlesA Hooper/R7/USEPA/US@EPA, Charlie Garlow/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Davis Zhen/R10/USEPA/US@EPA, George Brozowski/R6/USEPA/US@EPA, Kenneth Distler/R8/USEPA/US@EPA, Marilyn Ginsberg/DC/USEPA/US@EPA, Robert Duraski/R8/USEPA/US@EPA, Robert Dye/R7/USEPA/US@EPA, Stephen Hoffman/DC/USEPA/US@EPA, Stuart Walker/DC/USEPA/US@EPA, Susan Stahle/DC/USEPA/US@EPA, Tim Benner/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA, Valentine Anoma/DC/USEPA/US@EPA
Time zones:	This entry was created in a different time zone. The time in that time zone is: Wed 12/14/2011 1:00 PM EST2:00 PM EST

Description

Personal Notes

EPA-1634

Charlie Garlow/DC/USEPA/US

12/12/2011 04:54 PM

To Reid Rosnick

cc

bcc

Subject Accepted: Revisions to Subpart W Rule/Preamble Language

EPA-2786

Robert Dye/R7/USEPA/US

12/12/2011 07:46 PM

To Reid Rosnick

cc

bcc

Subject Declined: Revisions to Subpart W Rule/Preamble Language

EPA-3887

Gina McCarthy/DC/USEPA/US

Sent by: Cynthia Browne

12/13/2011 03:42 PM

To: Alan Perrin, Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Mike Flynn, Reid Rosnick, Susan Stahle, Tom Peake

cc: Cindy Huang, Don Zinger, Joyce Crowley, Kirsten King, Kristina Friedman, Virginia Stradford

bcc:

Subject: Pre-brief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings.

Revised November 29, 2005

Requesting Meeting with: Gina McCarthy, AA

Date of this Request: December 9, 2011

Point of Contact (Name/Number): Jon Edwards (Acting OD/ORIA) /
343-9320

Title of Meeting: PreBrief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings.

Purpose of Meeting: To update the AA on proposed revisions to Subpart W and issues anticipated to be raised during Final Agency Review.

Status (check one) –X Critical _ Less Immediate

Proposed Date/Last Possible Date: Week of December 19 (if possible; otherwise ASAP as AA's schedule permits).

If the meeting is critical, please explain why: Background: The Radiation Protection Division is proposing revisions to Subpart W. The proposed revisions clarify the application of Subpart W to certain types of facilities managing uranium byproduct material (i.e., non-conventional impoundments and heap leach piles) and propose Generally Available Control Technologies (GACT), including work practices, to limit emissions of radon. These proposed revisions are developed under a Consent Agreement with Colorado Citizens Against Toxic Waste and Rocky Mountain Clean Air Action.

Location of Meeting: AA's office

Length of Meeting: 45 minutes / 1 hr. as AA schedules permits.

Equipment/resources needed:

DATES TO AVOID: December 5 and December 7.

Key Participants:

Office/Organization	Name	Number
ORIA-OD	Mike Flynn	(202) 564-7403
	Anna Duncan	
	Jonathan Edwards	
	Alan Perrin	
	Daniel Schultheisz	
	Reid Rosnick	
	Tom Peake	
	Susan Stahle	

Submitted by: Ginny Stradford (343-9205)

EPA-2046

Reid Rosnick/DC/USEPA/US

12/14/2011 08:55 AM

To: Albion Carlson, Andrea Cherepy, Angelique Diaz, Barry Elman, CharlesA Hooper, Charlie Garlow, Davis Zhen, George Brozowski, Kenneth Distler, Marilyn Ginsberg, Robert Duraski, Robert Dye, Stephen Hoffman, Stuart Walker, Susan Stahle, Tim Benner, Tom Peake, Valentine Anoma

cc: Daniel Schultheisz

bcc:

Subject: Workgroup Meeting Necessary?

Good Morning All,

My briefing for the AA has been rescheduled for the afternoon of January 4, 2012, so the urgency of today's workgroup meeting has been relieved somewhat. I have received comments from a number of workgroup members on the draft rule and preamble, and I am working to resolve those issues. I am also in contact with several workgroup members about issues they have with various sections of the preamble. As a result, I'm not certain we need the meeting this afternoon, at least not yet. If acceptable with you I would like to postpone today's meeting. I can address comments over the next week and get a revised version of the package to you, probably in the next week. I would then like to reschedule the workgroup meeting and FAR discussion for Wednesday morning, January 4, so that I can get the sense of the workgroup prior to the briefing for the AA. If this is acceptable to you, could you please let me know as soon as you can so that I can cancel today's meeting. Thanks again for your continued support.

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

EPA-3401

Reid Rosnick/DC/USEPA/US

12/14/2011 09:54 AM

To Albion Carlson, Andrea Cherepy, Angelique Diaz, Barry Elman, CharlesA Hooper, Charlie Garlow, Daniel Schultheisz, Davis Zhen, George Brozowski, Kenneth Distler, Marilyn Ginsberg, Robert Duraski, Robert Dye, Stephen Hoffman, Stuart Walker, Susan Stahle, Tim Benner, Tom Peake, Valentine Anoma

cc

bcc

Subject Rescheduled: Revisions to Subpart W Rule/Preamble Language (Jan 4 11:00 AM EST in 1310L Room 502/DC-1310L-OAR@EPA)

EPA-939

"Abe Zeitoun" <azeitoun@scainc.com>

12/14/2011 03:09 PM

Please respond to <azeitoun@scainc.com>

To Jeffrey Blizzard

cc "'Harry Pettengill'", Reid Rosnick

bcc

Subject RE: Draft new Section 6.5 Review of RFA Small Business Impacts for NESHAP subpart W document

Please alert Valerie that we need a contractual amendment to assign you as the WAM……as was done for Reid earlier. In the interim, we will direct everything on that work assignment to you.

Thanks

Abe Zeitoun

SC&a, inc.

The information contained in this e-mail message and any attached files are confidential information. If you have received this e-mail in error, please notify the sender immediately by reply e-mail and delete all copies. If you are not the intended recipient, any use, reliance, dissemination, disclosure, or copying of this e-mail or any part of this e-mail or attached files is unauthorized.

From: Blizzard.Jeffrey@epamail.epa.gov [mailto:Blizzard.Jeffrey@epamail.epa.gov]
Sent: Wednesday, December 14, 2011 2:47 PM
To: azeitoun@scainc.com
Cc: 'Harry Pettengill'; Rosnick.Reid@epamail.epa.gov
Subject: RE: Draft new Section 6.5 Review of RFA Small Business Impacts for NESHAP subpart W document

Reid forwarded what was sent earlier this morning, but in the future, it needs to be sent straight to me.

Jeff Blizzard
Program Analyst
United States Environmental Protection Agency
Office of Air and Radiation
Radiation Protection Division
Center for Radiological Emergency Management
(202) 343-9470 - Office
(202) 695-5331 - Cell

From: "Abe Zeitoun" <azeitoun@scainc.com>
To: Jeffrey Blizzard/DC/USEPA/US@EPA
Cc: "'Harry Pettengill'" <pettengillh@verizon.net>
Date: 12/14/2011 02:35 PM
Subject: RE: Draft new Section 6.5 Review of RFA Small Business Impacts for NESHAP subpart W document

Have you received what Harry had sent this morning to Reid????....

Abe Zeitoun
Senior Vice President and Senior Program Manager
Regulatory Compliance and Nuclear Programs
1608 Spring Hill Road, Suite 400
Vienna, VA 22182
(703) 893-6600 Ext. 225
(571) 282-2852 (Direct Line)

SC&a, inc.

From: Blizzard.Jeffrey@epamail.epa.gov [mailto:Blizzard.Jeffrey@epamail.epa.gov]
Sent: Wednesday, December 14, 2011 2:23 PM
To: Harry Pettengill
Cc: 'Steve Marschke'; azeitoun@scainc.com; 'Gary at Quality Lapel Pins'; lskoski@aol.com; Rosnick.Reid@epamail.epa.gov; Peake.Tom@epamail.epa.gov; Schultheisz.Daniel@epamail.epa.gov
Subject: Draft new Section 6.5 Review of RFA Small Bussiness Impacts for NESHAP subpart W document

Harry,

As the new work assignment manager on this project, you need to start sending anything relating to the Economic Impact Analysis to me. My email is blizzard.jeffrey@epa.gov and my phone number is 202-343-9470. Let me know if you have any questions.

Thank you.

Jeff Blizzard
Program Analyst
United States Environmental Protection Agency
Office of Air and Radiation
Radiation Protection Division
Center for Radiological Emergency Management
(202) 343-9470 - Office
(202) 695-5331 - Cell

EPA-985

EAS.System@EPA

12/15/2011 09:05 AM

To Reid Rosnick

cc

bcc

Subject EAS Document Notification: For your reference: Award: EP-D-10-042/2-03

Award: EP-D-10-042/2-03 has been approved by Matt Courtad in EAS.
Modification: 000003
Description: Technical/Regulatory Support for Subpart W of NESHAPS
Owner: Valerie Daigler
Contract Specialist: Nnenna Njoku
Contracting Officer: Matt Courtad
Project Officer: Valerie Daigler
Site: OAR/ORIA
Contracting Office: RTPPOD

EPA-3806

Gina McCarthy/DC/USEPA/US

Sent by: Cynthia Browne

12/15/2011 11:30 AM

To: Alan Perrin, Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Mike Flynn, Reid Rosnick, Susan Stahle, Tom Peake

cc: Addie Johnson, Cindy Huang, Don Zinger, Joyce Crowley, Kirsten King, Kristina Friedman, Virginia Stradford

bcc:

Subject: Cancelled: Pre-Brief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings

EPA-1516

Tom Peake/DC/USEPA/US	To	Reid Rosnick
12/16/2011 02:50 PM	cc	Andrea Cherepy
	bcc	
	Subject	Can you send me the latest version of the Subpart W BID that has the latest chapter 6?

Hi,
I thought it would be useful to look at the whole BID and I have a pretty old copy. I can't see that I have a recent version.
Thanks.

Tom Peake
Director
Center for Waste Management and Regulations
US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

EPA-5526

Tom Peake/DC/USEPA/US

12/16/2011 02:50 PM

To Reid Rosnick

cc Andrea Cherepy

bcc

Subject Can you send me the latest version of the Subpart W BID that has the latest chapter 6?

Hi,
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Thanks.

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US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

EPA-6258

Marilyn Ginsberg/DC/USEPA/US

12/21/2011 03:58 PM

To Reid Rosnick

cc

bcc

Subject Subpart W -- Re: Draft Subpart W Preamble and Rule Language

Hi Reid,
I scanned through the document and didn't see changes (redline or strikeout) - I'd prefer to not read the entire document. So, can I assume that the exchange that you and I had about the final-closure terminology has not changed from our e-mails of 12/12 and 12/13? If that's the case, I'm fine with the Rev. 5 version of the draft.
Thanks, Marilyn

Reid Rosnick	Hello, Attached you will find Rev. 5 of t...	12/21/2011 02:53:55 PM

From: Reid Rosnick/DC/USEPA/US
To: Albion Carlson/R8/USEPA/US@EPA, Andrea Cherepy/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA, Barry Elman/DC/USEPA/US@EPA, CharlesA Hooper/R7/USEPA/US@EPA, Charlie Garlow/DC/USEPA/US@EPA, Davis Zhen/R10/USEPA/US@EPA, George Brozowski/R6/USEPA/US@EPA, Kenneth Distler/R8/USEPA/US@EPA, Marilyn Ginsberg/DC/USEPA/US@EPA, Robert Duraski/R8/USEPA/US@EPA, Robert Dye/R7/USEPA/US@EPA, Stephen Hoffman/DC/USEPA/US@EPA, Stuart Walker/DC/USEPA/US@EPA, Susan Stahle/DC/USEPA/US@EPA, Tim Benner/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA, Valentine Anoma/DC/USEPA/US@EPA
Cc: Daniel Schultheisz/DC/USEPA/US@EPA
Date: 12/21/2011 02:53 PM
Subject: Draft Subpart W Preamble and Rule Language

Hello,

Attached you will find Rev. 5 of the proposed rulemaking. I have attempted to address all comments provided. You will note mostly minor editorial changes. I did not change much of the wording on the economics section (section VI) because I'm still waiting for some input from workgroup members and our contractor. However I thought I'd send the document out now so that you have more time to review it before the holidays take over. I hope to discuss any late changes with you at the workgroup meeting on January 4, 2012, and determine if we are ready for FAR. Again, thanks for all of your help, and happy holidays.

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov[attachment "Draft Outline FR Proposal for Revision of Subpart W Rev 5.docx" deleted by Marilyn Ginsberg/DC/USEPA/US]

EPA-1785

Stuart Walker/DC/USEPA/US		To	Reid Rosnick
12/21/2011 05:37 PM		cc	
		bcc	
		Subject	Re: Draft Subpart W Preamble and Rule Language

Do you have a redline/strikeout version? It seems a waste to read 95 pages again when the comments are supposedly minor.

Reid Rosnick   Hello, Attached you will find Rev. 5 of t...   12/21/2011 02:53:54 PM

From:	Reid Rosnick/DC/USEPA/US
To:	Albion Carlson/R8/USEPA/US@EPA, Andrea Cherepy/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA, Barry Elman/DC/USEPA/US@EPA, CharlesA Hooper/R7/USEPA/US@EPA, Charlie Garlow/DC/USEPA/US@EPA, Davis Zhen/R10/USEPA/US@EPA, George Brozowski/R6/USEPA/US@EPA, Kenneth Distler/R8/USEPA/US@EPA, Marilyn Ginsberg/DC/USEPA/US@EPA, Robert Duraski/R8/USEPA/US@EPA, Robert Dye/R7/USEPA/US@EPA, Stephen Hoffman/DC/USEPA/US@EPA, Stuart Walker/DC/USEPA/US@EPA, Susan Stahle/DC/USEPA/US@EPA, Tim Benner/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA, Valentine Anoma/DC/USEPA/US@EPA
Cc:	Daniel Schultheisz/DC/USEPA/US@EPA
Date:	12/21/2011 02:53 PM
Subject:	Draft Subpart W Preamble and Rule Language

Hello,

Attached you will find Rev. 5 of the proposed rulemaking. I have attempted to address all comments provided. You will note mostly minor editorial changes. I did not change much of the wording on the economics section (section VI) because I'm still waiting for some input from workgroup members and our contractor. However I thought I'd send the document out now so that you have more time to review it before the holidays take over. I hope to discuss any late changes with you at the workgroup meeting on January 4, 2012, and determine if we are ready for FAR. Again, thanks for all of your help, and happy holidays.

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Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov[attachment "Draft Outline FR Proposal for Revision of Subpart W Rev 5.docx" deleted by Stuart Walker/DC/USEPA/US]

EPA-2757

Reid Rosnick/DC/USEPA/US		To	Stuart Walker
12/21/2011 07:00 PM		cc	
		bcc	
		Subject	Re: Draft Subpart W Preamble and Rule Language

Hi Stuart,

Version 4 was a redline/strikeout, but with 6 sets of minor comments I didn't do a redline/strikeout version of this version. Sorry.

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

-----Stuart Walker/DC/USEPA/US wrote: -----
To: Reid Rosnick/DC/USEPA/US@EPA
From: Stuart Walker/DC/USEPA/US
Date: 12/21/2011 05:37PM
Subject: Re: Draft Subpart W Preamble and Rule Language

Do you have a redline/strikeout version? It seems a waste to read 95 pages again when the comments are supposedly minor.

Inactive hide details for Reid Rosnick---12/21/2011 02:53:54 PM---Hello, Attached you will find Rev. 5 of the proposed rulemakReid Rosnick---12/21/2011 02:53:54 PM---Hello, Attached you will find Rev. 5 of the proposed rulemaking. I have attempted to address all co

From: Reid Rosnick/DC/USEPA/US
To: Albion Carlson/R8/USEPA/US@EPA, Andrea Cherepy/DC/USEPA/US@EPA, Angelique Diaz/R8/USEPA/US@EPA, Barry Elman/DC/USEPA/US@EPA, CharlesA Hooper/R7/USEPA/US@EPA, Charlie Garlow/DC/USEPA/US@EPA, Davis Zhen/R10/USEPA/US@EPA, George Brozowski/R6/USEPA/US@EPA, Kenneth Distler/R8/USEPA/US@EPA, Marilyn Ginsberg/DC/USEPA/US@EPA, Robert Duraski/R8/USEPA/US@EPA, Robert Dye/R7/USEPA/US@EPA, Stephen Hoffman/DC/USEPA/US@EPA, Stuart Walker/DC/USEPA/US@EPA, Susan Stahle/DC/USEPA/US@EPA, Tim Benner/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA, Valentine Anoma/DC/USEPA/US@EPA
Cc: Daniel Schultheisz/DC/USEPA/US@EPA
Date: 12/21/2011 02:53 PM
Subject: Draft Subpart W Preamble and Rule Language

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Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov[attachment "Draft Outline FR Proposal for Revision of Subpart W Rev 5.docx" deleted by Stuart Walker/DC/USEPA/US]

EPA-4585

Alan Perrin/DC/USEPA/US

12/28/2011 10:39 AM

To: Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Lee Veal, Reid Rosnick, Susan Stahle, Tom Peake

cc:

bcc:

Subject: Invitation: Prep for Subpart W pre-brief (Jan 4 10:00 AM EST in 1310L Room 402/DC-1310L-OAR@EPA)

Prep for 1/4/12 2:30 pm Pre-brief for Gina McCarthy on Final Agency Review for 40 CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings

Call in number: 1-866-299-3188; conference code: 2023439775

EPA-4976

Alan Perrin/DC/USEPA/US
12/28/2011 10:42 AM

To Virginia Stradford
cc
bcc
Subject Fw: Insufficient access: Prep for Subpart W pre-brief

Ginny, I need a room for a brief for Jon. [This is prep for an afternoon brief for Gina McCarthy.] Thanks,
Alan

~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Acting Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376

----- Forwarded by Alan Perrin/DC/USEPA/US on 12/28/2011 10:40 AM -----

Insufficient access: Prep for Subpart W pre-brief
Wed 01/04/2012 10:00 AM - 11:00 AM

Rooms: 1310L Room 402/DC-1310L-OAR@EPA

1310L Room 402/DC-1310L-OAR is unavailable

Description
~~~~~~~~~~~~~~~~~~~~

EPA-4709

Susan Stahle/DC/USEPA/US		To	Brian Littleton, Reid Rosnick
12/28/2011 10:52 AM		cc	Alan Perrin
		bcc	
		Subject	Fw: Prep for Subpart W pre-brief

Hi - I note that a couple subpart W meetings on January 4 seem to conflict with a Part 190 ANPR workgroup meeting. Since some of us are involved with both projects, wondering if ORIA could resolve the conflict? Thanks.

Susan Stahle
Air and Radiation Law Office (Rm 7502B)
Office of General Counsel
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW (ARN: MC 2344A)
Washington, D.C. 20460
ph: (202) 564-1272
fax: (202) 564-5603
stahle.susan@epa.gov

----- Forwarded by Susan Stahle/DC/USEPA/US on 12/28/2011 10:49 AM -----

Prep for Subpart W pre-brief

Wed 01/04/2012 10:00 AM - 11:00 AM

Attendance is for Susan Stahle

Chair: **Alan Perrin/DC/USEPA/US**

Location: Rm 402 Rooms: 1310L Room 402/DC-1310L-OAR@EPA

Required:	Anna Duncan/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA, Lee Veal/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Susan Stahle/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA

Description

Prep for 1/4/12 2:30 pm Pre-brief for Gina McCarthy on Final Agency Review for 40 CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings

Call in number: 1-866-299-3188; conference code: 2023439775

Personal Notes

EPA-4141

Alan Perrin/DC/USEPA/US

12/28/2011 11:07 AM

To Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Lee Veal, Reid Rosnick, Susan Stahle, Tom Peake

cc

bcc

Subject Invitation: Prep for Subpart W pre-brief (Jan 3 03:00 PM EST in 1310L Room 502/DC-1310L-OAR@EPA)

[Rescheduled due to conflict with 40 CFR 190 workgroup meeting.]

Prep for 1/4/12 2:30 pm Pre-brief for Gina McCarthy on Final Agency Review for 40 CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings

Call in number: 1-866-299-3188; conference code: 2023439775

EPA-4977

Alan Perrin/DC/USEPA/US		To	Alan Perrin
12/28/2011 11:09 AM		cc	
		bcc	
		Subject	Re: Fw: Insufficient access: Prep for Subpart W pre-brief

Ginny -- please ignore my request. I rescheduled to 1/3/12 in 502. Thanks, Alan
~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Acting Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376

Alan Perrin	Ginny, I need a room for a brief for Jon....	12/28/2011 10:42:30 AM

From: Alan Perrin/DC/USEPA/US
To: Virginia Stradford/DC/USEPA/US@EPA
Date: 12/28/2011 10:42 AM
Subject: Fw: Insufficient access: Prep for Subpart W pre-brief

---

Ginny, I need a room for a brief for Jon. [This is prep for an afternoon brief for Gina McCarthy.] Thanks, Alan
~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Acting Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376

----- Forwarded by Alan Perrin/DC/USEPA/US on 12/28/2011 10:40 AM -----

Insufficient access: Prep for Subpart W pre-brief
Wed 01/04/2012 10:00 AM - 11:00 AM

Rooms: 1310L Room 402/DC-1310L-OAR@EPA

1310L Room 402/DC-1310L-OAR is unavailable

Description

EPA-4383

Gina McCarthy/DC/USEPA/US

Sent by: Cindy Huang

12/28/2011 03:54 PM

To: Alan Perrin, Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Mike Flynn, Reid Rosnick, Susan Stahle, Tom Peake

cc: Cindy Huang, Don Zinger, Joyce Crowley, Kirsten King, Kristina Friedman, Virginia Stradford

bcc:

Subject: Rescheduled: Pre-brief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings. (Jan 9 03:00 PM EST in ARN-OAR-5400)

Revised November 29, 2005

Requesting Meeting with: Gina McCarthy, AA

Date of this Request: December 9, 2011

Point of Contact (Name/Number): Jon Edwards (Acting OD/ORIA) / 343-9320

Title of Meeting: PreBrief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings.

Purpose of Meeting: To update the AA on proposed revisions to Subpart W and issues anticipated to be raised during Final Agency Review.

Status (check one) –X Critical _ Less Immediate

Proposed Date/Last Possible Date: Week of December 19 (if possible; otherwise ASAP as AA's schedule permits).

If the meeting is critical, please explain why: Background: The Radiation Protection Division is proposing revisions to Subpart W. The proposed revisions clarify the application of Subpart W to certain types of facilities managing uranium byproduct material (i.e., non-conventional impoundments and heap leach piles) and propose Generally Available Control Technologies (GACT), including work practices, to limit emissions of radon. These proposed revisions are developed under a Consent Agreement with Colorado Citizens Against Toxic Waste and Rocky Mountain Clean Air Action.

Location of Meeting: AA's office

Length of Meeting: 45 minutes / 1 hr. as AA schedules permits.

Equipment/resources needed:

DATES TO AVOID: December 5 and December 7.

Key Participants:

Office/Organization	Name	Number
ORIA-OD	Mike Flynn	(202) 564-7403
	Anna Duncan	
	Jonathan Edwards	
	Alan Perrin	
	Daniel Schultheisz	
	Reid Rosnick	
	Tom Peake	
	Susan Stahle	

Submitted by: Ginny Stradford (343-9205)

EPA-4620

Gina McCarthy/DC/USEPA/US

Sent by: Cindy Huang

12/28/2011 04:23 PM

To: Alan Perrin, Anna Duncan, Daniel Schultheisz, Jonathan Edwards, Mike Flynn, Reid Rosnick, Susan Stahle, Tom Peake

cc: Cindy Huang, Don Zinger, Joyce Crowley, Kirsten King, Kristina Friedman, Virginia Stradford

bcc:

Subject: Rescheduled: Pre-brief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings. (Jan 10 04:15 PM EST in ARN-OAR-5400)

Revised November 29, 2005

Requesting Meeting with: Gina McCarthy, AA

Date of this Request: December 9, 2011

Point of Contact (Name/Number): Jon Edwards (Acting OD/ORIA) / 343-9320

Title of Meeting: PreBrief on Final Agency Review for 40CFR Part 61, Subpart W: National Emission Standards for Radon Emissions from Operating Mill Tailings.

Purpose of Meeting: To update the AA on proposed revisions to Subpart W and issues anticipated to be raised during Final Agency Review.

Status (check one) –X   Critical   _ Less Immediate

Proposed Date/Last Possible Date: Week of December 19 (if possible; otherwise ASAP as AA's schedule permits).

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Location of Meeting: AA's office

Length of Meeting: 45 minutes / 1 hr. as AA schedules permits.

Equipment/resources needed:

DATES TO AVOID: December 5 and December 7.

Key Participants:

Office/Organization	Name	Number
ORIA-OD	Mike Flynn	(202) 564-7403
	Anna Duncan	
	Jonathan Edwards	
	Alan Perrin	
	Daniel Schultheisz	
	Reid Rosnick	
	Tom Peake	
	Susan Stahle	

Submitted by: Ginny Stradford (343-9205)

EPA-3793

Daniel Schultheisz/DC/USEPA/US

12/29/2011 10:26 AM

To Lee Veal

cc

bcc

Subject Fw: Subpart W Briefing for Gina

FYI, the Gina briefing has been rescheduled for January 10. The notice came late yesterday. So no worries on getting the package up.

-----Forwarded by Daniel Schultheisz/DC/USEPA/US on 12/29/2011 10:24AM -----

To: Lee Veal/DC/USEPA/US@EPA
From: Rajani Joglekar/DC/USEPA/US
Date: 12/29/2011 07:35AM
Cc: Alan Perrin/DC/USEPA/US@EPA, peake.tom@epa.gov, Reid Rosnick/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Brian Littleton/DC/USEPA/US@EPA
Subject: Fw: Subpart W Briefing for Gina

Lee,

While on AL, Reid was able to respond to my email. Attached is Reid's draft briefing for Gina.

I am sure Alan alerted you about the Jan 4 Subpart W briefing for Gina. [Her Office needs to get a copy of the briefing 2 days before the scheduled date.]

Thanks

Rajani

(See attached file: FAR v2.pptx)

[attachment "FAR v2.pptx" removed by Daniel Schultheisz/DC/USEPA/US]

EPA-2425

Reid Rosnick/DC/USEPA/US		To	Beth Miller
10/07/2011 07:56 AM		cc	
		bcc	
		Subject	For Website

SubpartW_10-7-2011_QuarterlyConfCall.docx

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

Subpart W Quarterly Conference Call
October 6, 2011, 11:00 am – 12:00 pm
1310 L Street NW, Room 502, Washington, DC

[DRAFT] Conference Call Notes

Meeting Participants:

EPA HQ:	Reid Rosnick, Emily Atkinson
EPA Regions:	Angelique Diaz, Region 8
CCAT:	Sharyn Cunningham, Lynn Holtz Minasi
Industry:	Oscar Paulson (Kennecott), Scott Charmin (Uranium One), Jeff Kelsey (UR Energy)
Other:	Travis Stills (Energy Minerals Law Center), Katie Sweeney (National Mining Association)

R. Rosnick: This is our regularly scheduled quarterly call.

When we last spoke in July, we had just finished our Options Selection Meeting with our AA, where we presented a number of options and how the work group was proposing to address revising the Subpart W regulation. A number of approaches were reviewed and we were given direction on how to proceed.

The work group has drafted preamble and regulation language – what you would actually see when it is published in the Federal Register. All the work group members have reviewed and submitted comments. It is now with OGC and after we receive those comments, the work group and OGC comments will be reconciled. The new draft then goes to the work group for review one more time. Then we have an internal Agency Review, which is the final step. Once we receive approval there, it goes to OMB, who has up to 90 days to review and approve it. We will reconcile any comments from OMB and then it goes to the EPA AA for signature and then is published in the federal register.

I can now open it up for questions.

T. Stills: With the settlement in mind, there has not been much released and posted to the website. Any plans on updating it?

R. Rosnick: I anticipate having the risk assessment document probably in the next 3 weeks or so. EPA's internal reviewer had been in the hospital for some time and we lost his expertise in the review process. Now that he is back we can move that review forward.

T. Stills: Anything from 2011 that has been produced? There is nothing recent that has been produced. We had expected that the EPA would produce more information for the affected communities. You have an opportunity for more outreach before the rule is published in the federal register. More data that is held by the EPA should be published before the new rule comes out.

R. Rosnick: There are several documents on the website of compilations of data that specifically addresses technical questions you may have. I would more than happy to discuss any of those documents, but I don't get responses from folks.

T. Stills: Maybe we should schedule a call for a more detailed update from you.

R. Rosnick: With the preamble and proposed rule still in a confidential and deliberative state, I am not at liberty to discuss a lot of the material.

T. Stills: There is a lot I believe with certainty that can be shared with the general public. We would like to follow-up with you to have another call to discuss it. If more technical and background information can be published before the rule is published it would be helpful.

O. Paulson: Our primary concern is that we have been gathering a bit of data on our own and done test work on our own on test emissions. We are developing other data that may be useful. The bottom line is we think the EPA is putting the cart before the horse. The EPA is putting out the rule, but we would like to respond and provide comments to the Cohen Risk Assessment report before the rule is published. We would like to review the risk analysis first and provide comments, material and data to the EPA before the rule is published. At that point we think it would flow into the rule making process. Since that report is not available to us, we can't comment and provide data before the rule is published.

R. Rosnick: We have not had a quick process here at the EPA, and our resources here are limited. Our expert here is now back in the office and in the next couple of weeks we will have that report finalized and published. If you have data and/or information that could be helpful to us in the review, we would be happy to take a look at it. If you have anything that you care to submit, just make it available. If that doesn't happen, once the rule is proposed you can still submit the data at that point, along with your comments on the proposed rule. We actually have to get this rule proposed and out – so we are balancing between getting this done quickly but also gathering as many comments and data as possible.

T. Stills: Section 114 request gone out?

O. Paulson: We have tested on our own, while not being requested by anyone to do so.

T. Stills: Why is that voluntary when a number of other operators have gotten a 114 request requiring them to submit the information? Why wasn't it sought out in the first place, but now that we know there could be more data from them – why isn't anyone asking for it?

O. Paulson: Because we are not an in-situ leaching facility.

T. Stills: I would now request that Cotter get a request for their data under the 114 request.

R. Rosnick: Cotter did receive a Section 114 letter. Regarding Kennecott, the reason we did not send one was because they have been in compliance with submitting radon flux data, and they are currently in standby mode.

T. Stills: That is fair enough, but it sounds like there could be more information out there that you could request so the regulation could be written based on all the available data.

S. Cunningham: One of the things we are experiencing is that Cotter is claiming that their impoundments are closed. They state it in different ways at different times, what we are experiencing and observing here could be valuable to the rule making. The problem I am having by not seeing the rule assessment yet, technical issues being reviewed is that we can't compare the proposed rule to what we are seeing here with this newly closed impoundment. We would expect that the regulation does not address some of the issues we are seeing here with this pond closure. It is difficult for a person outside of the industry and Agency to understand how to contribute to the process. Yes, there are some dated documents here available on the website but we are disappointed because we came in with good faith for the settlement but it hasn't met its obligations. Why would the EPA want to handle things this way? I will send you some data on the enclosure, so it can be available to you.

R. Rosnick: I will tell you that one of the things we have looked at in Subpart W and the work group has addressed is – when does closure start for a facility. We have looked at it and made recommendations.

S Cunningham: I am sitting a mile from this facility and there have been no radon tests since 2010. So while everybody is working on this rule making, Rome is burning. I will send you something on this.

R. Rosnick: Other questions or comments please. Our next conference call is schedule January 5, 2012 at 11am. I hope to have good news for everyone by then. I will do what I can to get the risk assessment document on the website as quickly as I can. If you have any questions or comments between now and then, please get in touch.

T. Stills: As far as narrowing down the target date. I know we differ on what "Winter" means, but now that you have a January 2012 date in mind – you should consider posting the proposed date. I appreciate that you don't have a hard deadline, but if you can narrow it down that would be great.

R. Rosnick: I will post this tentative date on the website. We will be talking again in January. Good bye.

EPA-1368

Lilia Dignan/R9/USEPA/US

10/13/2011 01:46 PM

To aaclark, aallison, aanu129, abraudis, alicyn.gitlin, allen.harryL, amahkewa, amben2000, amcgrath, anderholm, aneri, angela.cooper, angela.maloney, angelita.chee, anoma.valentine, april.gil, aragin, arbaugh.steve, artjhood, ATaylor, baca, bain.andrew, barbara.toth, bart.wilking, barton.dana, beclabito, benniewilliams, bicharley, bill.brancard, bill.vontill, bklein, blkfalls, bob.darr, bobtallini, bpostle, brad.morgan, bren_nnepasf, brian.d.jordan, brimhall, btoth, Basinger.david, Bob.Cornez, calvert_curley, carol.a.wies, casamerolake, cassiano, cathcharities, cbrunson, charles.schlinger, cheryl.dyer, choliday, chris.eustice, chrislopez, chrissyowens, churchrock, cjacobson, cjk, cmayweather, coleman.sam, connie.f.romero, cove, coyotecanyon, crownpoint, crumpgb2004, ctodecozy, curry.bridgid, cwolf, Camille.price, Cheryl.Dyer, Chonyumptewa, daisyflower86044, dale_Wirth, daniel.schnee, darren_pete, daturamoet, dave.j.becker, david.brickey, david.c.hays, david.geiser, david.mayerson, david.mcdonnell, david.ohori, david.shafer, davidson.brian, dawn.mccuster, dbrugge, deborah.klaus, deborah.steckley, deborah.sullivan, deerwater_nez, dennehotso, derrith.watchman-moore, deyonne.sandoval, dgapta, dgratson, dhont.jeff, diamond.jane, diane.stearns, dianemalone54, diaz.alejandro, dignan.lilia, dina.vigil, dineyazhe.michele, djbills, dkee_1942, dlneztsosie, dlw, don.b.bass, donyellowman86045, dornell.pete, douglas.carolyn, douglas.peter, douglas.zang, dshandy, dtaylor, duncan.will, Diana.m.sainz, e.esplain, eaglesswilliams, earle.dixon, ediehood, elaine.ezra, eldine.stevens, elisa, elrena.voigt, eugeniaquintana, EveBarron, falk.linda, fcx_communications, ferreira, fong.vance, forgottenpeoplecdc, fred_sherman, freidasw, gary.robbins, gavinseweyestewa283, gene.lucero, gene1ness, george.padilla, gertrude_lee, geselbracht.jeanne, gillilan, ginger, glynn_kathy, goharagis, goldberg.karen, goldsmith.sara, grey1, gshonanie, gstark, Gogal.Danny, h.shorty, harmon.kenneth, harper.stephen, harrilene.yazzie, hbklain_99, heidi.krapfl, heller.zoe, henryhaven, herman.shorty, hhavenjr, hhd4, hillenbrand.john, hingerty.michael, hlb8, hoff.chris, hogan.sean, holland.shepherd, hoskie.sadie, hozhoogo_nasha, ida.bradley, iller, jacobs.sara, jamesr.smith, jani.ingram, jasonjohn, jeanettevice, jeff.baran, jerry.schoeppner, jfgraves2, jim.dragna, jim_dumont, jkotton, jlewis, jmiller, jnystedt, joel.gross, john.elmer, john.hamilton, john.kretzmann, john.pfeil, johnleeper, johnradcliffe, jolene.tom, jolish.taly, jones.gail, joseph.pantoja, jphoffma, jplummer, jpmacy, jrdg3, jsc, jsharpe, judith.wilson, John.Krause, karen.garcia, karr.harrison, katherine.hardy, katherine.kane, kathy helms, kayenta, kenyaproff, khelms, kimdavis, kinlahcheeny1, kkisiel, klinger.adam, kmiskin, kristinamcasuse, kwgarcia, Kinlahcheeny1, lae28, lance.hauer, larry.tinney, lcspencer, lee.bessie, lillian.d.wakeley, linda.delay, lisa.allee, llamone, lloyd.moiola, lmonroe02, lnaseyowma, lsweiss, lswenson, lvbenally, lvgarcia, lwb6, lydia.chang, lyndon.endischee, lynn_r_ab, l_king2013, Lara.E.Beasley, LPuhuyesva, ma.grace, mahesh.vidyasagar, mahoney.mike, maier.brent, manandhar2, mansel.nelson, manuelito, marcello.mollo, marianolakechapter, mark purcell, mark.bryant, mark.freeland, marley, martynts, maryann.menetrey, matherne, maxine.lynch, mbecenti, mcowawn, mdowns, melvinbadonie, mexicanwater, meyer.john, mgbegay, mgoldtooth, mgonzales, mhiza, mhnez, mhyazzie, michael.wichman, milton.bluehouse, mkcarroll, mksilver, mksilver_nnepapwssp, mmiller, moore.kathi, moutoux.Nicole, mroanhorse, msage, msiegel, mspelizza, muza.richard, nahodishgish, natalii13, nate1lee, navajotrash, nesky.tony, newcomb, nmyers, nnepansp, nnepauic, nnepa_pwssp, nrc46, nuttall, olivia_maloney, oljato, onewhositsheavy, opheliabegay, orpha, osullivan.monika, overman.pamela, pamela.juliano, pam_innis, panto41815, pasi_swa, pbluehouse, peake.tom, peck.cara, perezsullivan.margot, philharrisonjr, pinedale, pmorgan, price.lisa, purcell.mark, Philene.herrera, rajean.victor, raquelw, raymond.rodarte, rbsumatz, rbush, rcecchinimm, redvalley, reeves.linda, reid.allan, rena.gould, reservationfire, revetts, rezinjun, rfoote, rgrey, rgrey, rhenderson, rhjohnso, rhorton, richard.chang, richmond.dawn, ripperda.mark, rjankowitz, rjnewill, rnewcomer, rnotah, robert.johnson, robert.lawrence, robert.tohe, robertr.johnson, robin_brown, rockin17, rocksprings, roger.florio, roger.lewis, ronezra, rose.duwyenie, rosenblum.shelly, rosnick.reid, rowtcob, rpkontz, rredsteer, rtsingine, russ_macrae, rwhitehorn1, ryan.kevin, Ramone_Sandy, Russ_MacRae, sa326, sanostee, sarah, savoyy, schavez, schechter.debbie, sdearwent, sdw, sed7, shadeky, shammieb, shiprock, shirley.martinez, sjc7, smithlake, sophie.mangado, sric.chris, sseifert, sstrait, stan.morrison, standingrock, stenger.wren, stephen.cohen, stephenbetsitty, stephen_spencer, steven.miller, stevens.shelley, stollman.scott, stralka.daniel, stuart.kimball, susan.lucaskamat, susan.m.hill2, susan.mason, sweetwater, Samad-dustov, takata.keith, tbartlett, tbell100, tcshorty, teecnospos, tenley.clancy, terence.foreback, terry.robert, terry.s.lauck, tgengler, thad.t.fukushige, thbinali, thebrownmachine, thomas.stephens, thoreau, tntnez, tony.hood, tplessinger, tr73, tracy.plessinger, tracy.ribeiro, trock, trombadore.claire, tubacity, turner.ladonna, Terry.S.Lauck, uppermoenkopi, vfnez, vfowler, vianu.libby, vivcraig, vivcraig, viviancraig, viviancraig, vmaldonado, vqj, wade_eftv, walker.stuart, walter.phelps, warren.carl, webster.susan, wilkening.matt, william.fetner, williams.donald, williams.laura, wilson.wenona, winifredp, wjwgeochem, Willette.A.DuBose, ybarney, yellowman2, yellowmanh, young.patrick, zdg1, zenkin.svetlana, Zoe.isaacson

cc

bcc

Subject October 25, 2011 EPA Stakeholder Meeting on Uranium Legacy Contamination Issues - Albuquerque NM

1 attachment

Uranium Stakeholder Event Flyer ABQ.pdf

Good Morning!

You are invited to attend the Stakeholder Meeting on October 25 to be held at The Albuquerque Marriott.

This is not same as our Workshop in Farmington on November 8-10, 2011.

Please see flyer and information in the attached email. Thank you very much.

Lilia Dignan
U.S. EPA, Superfund Div.
75 Hawthorne Street (SFD-6)
San Francisco, CA 94105
Phone: 415 972-3779
Fax: 415 947-3520
Email: dignan.lilia@epa.gov

----- Forwarded by Lilia Dignan/R9/USEPA/US on 10/13/2011 10:41 AM -----

----- Forwarded by Clancy Tenley/R9/USEPA/US on 10/13/2011 09:06 AM -----

From: Andrew Baca/DC/USEPA/US
To:
Cc:
Date: 10/13/2011 08:35 AM
Subject: ACTION REQUESTED: October 25th EPA Stakeholder Meeting on Uranium Legacy Contamination Issues - Albuquerque NM

All,

Here is the flyer and information that we'd like you to provide to your contacts who may be interested in participating.

EPA Stakeholder Meeting on Uranium Legacy Contamination Issues
EPA Assistant Administrator, Mathy Stanislaus

Date: Tuesday, October 25
Time: 2:30 p.m. – 4:00 p.m.
Location: The Albuquerque Marriott
2101 Louisiana Blvd. NE
Albuquerque NM
Room: Carlsbad Room

Thank you.

- Andrew

Andrew Baca, National Tribal Program Coordinator
Office of Solid Waste and Emergency Response
1200 Pennsylvania Avenue, NW
Mailcode 5101-T
Washington, DC 20460
baca.andrew@epa.gov
Phone: 202.566.0185

From: Tai Lung/DC/USEPA/US
To: Clancy Tenley/R9/USEPA/US@EPA, JaniceHQ Sims/DC/USEPA/US@EPA, Jeannine Hale/R6/USEPA/US@EPA, Jennifer Wilbur/DC/USEPA/US@EPA, Joseph Bruss/DC/USEPA/US@EPA, LaDonna Turner/R6/USEPA/US@EPA, Yolanda Sanchez/DC/USEPA/US@EPA, GailAnn Cooper/DC/USEPA/US@EPA, Sam Coleman/R6/USEPA/US@EPA, Dana Barton/R9/USEPA/US@EPA, Wallace Woo/R9/USEPA/US@EPA, Suzanne Wells/DC/USEPA/US@EPA, Janetta Coats/R6/USEPA/US@EPA, Mike Bandrowski/R9/USEPA/US@EPA, Carlton Eley/DC/USEPA/US@EPA, Israel Anderson/R6/USEPA/US@EPA, Joy Campbell/R6/USEPA/US@EPA, Kimberly Patrick/DC/USEPA/US@EPA, Lura Matthews/DC/USEPA/US@EPA, Victoria Robinson/DC/USEPA/US@EPA, Aaron Bell/DC/USEPA/US@EPA, Kent Benjamin/DC/USEPA/US@EPA, Carlos Pachon/DC/USEPA/US@EPA, Dan Powell/DC/USEPA/US@EPA, Timonie Hood/R9/USEPA/US@EPA, James Yarbrough/R6/USEPA/US@EPA, DavidR Lloyd/DC/USEPA/US@EPA
Cc: Marsha Minter/DC/USEPA/US@EPA, Pat Carey/DC/USEPA/US@EPA, Andrew Baca/DC/USEPA/US@EPA
Date: 10/11/2011 04:57 PM
Subject: ACTION REQUESTED: October 26th White House and EPA Stakeholder Meeting at the Albuquerque NEJAC Conference

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All,

I wanted to share this information with everybody as we are putting together a second stakeholder meeting for Mathy during the NEJAC.

OSWER will be holding a White House stakeholder meeting on Small Business, Job Training and Green Jobs featuring OSWER Assistant Administrator, Mathy Stanislaus, on **October 26 from 10:30 - noon.** This meeting will take place at the Albuquerque Marriott located at 2101 Louisiana Boulevard NE. We have not yet identified which room the meeting will be held in but we will share this information as soon as we receive it.

This will be a White House and EPA stakeholder meeting. This designation does not really mean much for our purposes. The White House has asked each of the federal agencies to hold stakeholder meetings on a monthly theme. This month's outreach theme is jobs

We need your help reaching out to the appropriate stakeholders. We are looking for any stakeholders in the area that would like to talk with Mathy about topics including (but not limited to) green jobs, building small business capacity, work force development and job training. Please let me know if you have any contacts that would fit this bill or just forward the information on and CC me.

Don't forget that Andrew Baca is also putting together another stakeholder meeting for Mathy tentatively scheduled for Tuesday, October 25 at 2:30. The topic of that meeting will be legacy uranium mining issues. If you have any questions about that you can reach Andrew at 202-566-0185.

I have attached a flyer for the meeting. There is a good chance we may revise it slightly but it should helpful when sharing information with others on the meeting. Please call or email if you have any questions or need more information. I don't have much more than that currently but I will continue to share information as this meeting comes together. Thanks,

Tai

[attachment "WH Stakeholder Event Flyer NEJAC.pdf" deleted by Andrew Baca/DC/USEPA/US]

Tai C. Lung | U.S. Environmental Protection Agency | OSWER | IPCO | Tel 202.566.1296 | Cell 202.255.6201 | Fax 202.566.0202 | lung.tai@epa.gov

EPA Stakeholder Meeting on Uranium Legacy Contamination Issues

featuring EPA Assistant Administrator, Mathy Stanislaus

Mathy Stanislaus, Assistant Administrator for the U.S. Environmental Protection Agency's Office of Solid Waste and Emergency Response, will hold a stakeholder meeting on legacy contamination issues related to uranium mining. Please join us for a discussion of these important issues.

Date: Tuesday, October 25
Time: 2:30 p.m. – 4:00 p.m.
Location: The Albuquerque Marriott
2101 Louisiana Blvd. NE
Room: Carlsbad Room

Don't miss this opportunity to engage an EPA official on this important topic!

For more information on this session please contact Andrew Baca at baca.andrew@epa.gov

EPA-5207

Angelique Diaz

To

cc

bcc

Subject UPLOAD C:\Users\adiaz01\Documents\TELECOMMUTE\Subpart W\W WORKGROUP\SubWFOIAResponsiveDocuments\Denision response to section 114letter.pdf

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DENISON MINES

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June 1, 2009

Mr. Charles Garlow, Attorney-Advisor
OECA, Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave. N.W. – MC2242A
Washington, DC 20460

Dear Mr. Garlow:

Re: Request to Provide Information Pursuant to the Clean Air Act
Denison Mines (USA) Corp.-White Mesa Uranium Mill, Blanding Utah

This is Denison Mines (USA) Corp's. ("Denison's") response to the United States Environmental Protection Agency's ("EPA's") Request For Information dated February 24, 2009. Each of EPA's questions is provided below in italics, followed by Denison's response in regular font.

The individuals responsible for responding to this request are David C. Frydenlund, Vice President Regulatory Affairs and Counsel, Steven D. Landau, Manager, Environmental Affairs and Harold R. Roberts, Executive Vice President, US Operations of Denison.

1. Please list each uranium mill and uranium mill tailings impoundment located in the United States of America that has been, or is currently, owned or operated by Denison or affiliated corporations located in the United States of America. Include the exact location of each uranium mill by map and legal property description:

Denison Response:

Denison owns and operates the White Mesa Uranium Mill (the "Mill") and its tailings impoundments (Cells 2, 3 and 4A), which are located in central San Juan County Utah approximately 6 miles south of the city of Blanding (see Figures 1-1 and 1-2 of the enclosed Reclamation Plan for the Mill). Within San Juan County, the Mill site is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of Township 37S, Range 22E, and Sections 4, 5, 6, 8, 9, and 16 of Township 38S, Range 22E, Salt Lake Base and Meridian (See Figure 1-2 of the enclosed Reclamation Plan). A full legal description of the fee lands comprising the Mill site is contained in Section 3.1 of the enclosed Reclamation Plan.

2. *Please list each uranium in-situ leaching facility located in the United States of America that has been, or is currently, owned or operated by Denison or affiliated corporations. Please include the exact location of each uranium mill by map and legal property description:*

Denison Response:

Denison does not own or operate any uranium in-situ leaching facilities in the United States of America. The location and legal description of the Mill are provided in the response to question 1.

3. *Please provide the following information for each uranium mill and uranium in-situ leaching facility identified in questions 1 and 2.*

   a. *A complete description of each uranium mill and uranium in-situ leaching facility's operational status (e.g., permanently shut down, temporarily shut down, standby status, in full or partial operation), method of operation (continuous disposal, phased disposal or other method) and methods by which compliance with the NESHAP standards, specified at 40 C.F.R. § 61.252, is ensured (meeting emission limit in Section 61.252(a) and work practices in (b) and (c)). Include a description of the type of facility (conventional, in-situ leach or combination);*

Denison Response:

The Mill is an operating conventional uranium mill. It has operated on a campaign basis over the years, depending on the availability of ores and market conditions. The Mill has been fully operational, processing conventionally mined uranium/vanadium ores, during the period from April 2008 to May 2009. Denison expects to commence another conventional ore processing campaign in 2010, depending on market conditions and available ores. In the meantime, the Mill will process alternate feed materials, which are uranium-bearing materials other than conventionally mined uranium or uranium/vanadium ores. For the three years prior to this last conventional ore run, the Mill also processed alternate feed materials. Mill staffing is typically reduced for alternate feed runs, but the Mill can nevertheless be considered to be running at full operation while processing either conventional ores or alternate feed materials.

The "method of operations" at the Mill is phased disposal of tailings. Compliance with the NESHAP standards at 40 CFR 61.252(a) is determined annually for existing impoundments (i.e., Cells 2 and 3). The annual Radon emissions for existing impoundments are measured using Large Area Activated Charcoal Canisters in conformance with 40 CFR, Part 61, Appendix B, Method 115, Restrictions to Radon Flux Measurements, (EPA, 2008). These canisters are passive gas adsorption sampling devices used to determine the flux rate of Radon-222 gas from the surface of the tailings material. For impoundments licensed for use after December 15, 1989 (i.e., Cell 4A), Denison employs the work practice standard listed at 40 CFR 61.252(b)(1) in that all tailings impoundments constructed or licensed after that date are lined, are no more than 40 acres in area and no more than two impoundments are operated for tailings disposal at any one time.

b. *A history of operation since 1979, including:*
   i. *the original date of construction of each uranium mill and uranium in-situ leaching facility;*
   ii. *the plan of operation and plans to shut-in or close active operations;*
   iii. *ownership changes; and*
   iv. *whether the uranium mill and uranium in-situ leaching facility is existing, new, or has plans for reactivating any operations that have been curtailed.*

Denison Response:

Original Date of Construction

The Mill is an existing facility. A uranium ore buying station operated at the Mill site from 1977 until the Mill was constructed. Construction of the Mill was initiated in 1979, and operations commenced in 1980 upon the issuance by the United States Nuclear Regulatory Commission ("NRC") of a source material license for the Mill in May 1980.

The Mill's original licensing by NRC contemplated the use of six cells, one of which (Cell 1) is an evaporation facility and is not used for the disposal of tailings. Construction of Cell 1 was completed in June of 1981. Construction of Cell 2 was completed in May 1980. Cell 2 is now full and has been provided with an interim cover as the beginning phase of final closure. Construction of Cell 3 was completed in September 1982. Cell 3 is nearly full but remains in service at the time of this writing.

Since Cells 2 and 3 were constructed prior to December 15, 1989, they are "existing impoundments" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. Cell 1, which was also constructed prior to December 15, 1989 is an evaporation pond and does not accept tailings for disposal. It is therefore not an "existing impoundment" within the meaning of those sections. Construction of Cell 4A was substantially completed on November 30, 1989, but was not licensed for operations until March 1990. Cell 4A is therefore not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. Cell 4A was used briefly for the disposal of raffinate solutions in 1990. The cell had not been used after 1990, and, as a result, damage occurred to the seams in the liner due to thermal stress from years of exposure to direct sunlight. Denison removed the solutions and crystals from Cell 4A in 2006, deposited them in Cell 3 and relined Cell 4A in 2007/2008. Cell 4A was approved for use in 2008 by the Executive Secretary (the "Executive Secretary") of the State of Utah Radiation Control Board, Department of Environmental Quality ("UDEQ").

Cell locations 4, 5 and 6 encompass 80 acres each but, for construction and regulatory purposes, these cell locations will be subdivided into two 40 acre cells within each designated Cell location. Thus, the 40 acre cells are numbered 4A, 4B, 5A, 5B, 6A and 6B. Of these Cells only Cell 4A has been constructed.

Cells 3 and 4A are the tailings impoundments in operation at this time. The design plans and an Environmental Report supporting the construction of Cell 4B have been submitted to and are under review by the Executive Secretary. Cell 4B will not be used for the disposal of tailings until Cell 3 ceases to be in operation (i.e., until Cell 3 is full and has been fully covered with interim cover as the beginning phase of final closure).

Plan of Operation

The plan of operation is to continue to mill uranium and uranium/vanadium ores and alternate feed materials, as market conditions permit, until all Cells have been constructed and operated to their full capacity. This progression will continue in a phased manner such that only two 40 acre tailings impoundments will be in operation for the disposal of tailings at any one time (with the exception of Cell 3, which has an area of approximately 71 acres and which was in existence and licensed for use prior to December 15, 1989). There are no plans to shut in or close active operations.

Impoundment closure will be performed in accordance with the Mill's approved Reclamation Plan, which complies with the requirements of 10 CFR Part 40, Appendix A. A copy of the Mill's Reclamation Plan is enclosed with this letter. Final closure of tailings cells will begin with placement of interim cover over all of the surface area of the tailings cells. The interim cover will limit the Radon-222 emissions to the ambient air from the cell to 20 pCi/(m^2-sec). Final closure will be completed at the time of Mill decommissioning, once the tailings have been dewatered and settled and are suitable for placement of the final cover.

Ownership Changes

The Mill has had ownership changes with time. The Mill was originally constructed by Energy Fuels Nuclear, Inc. ("EFN") and its affiliates. EFN was the original operator of the Mill. In 1984 Umetco Minerals Corporation an affiliate of Union Carbide Corporation, acquired a majority interest in the Mill and became operator of the Mill. Umetco operated the Mill until 1994 when EFN and its affiliates re-acquired Umetco's interest in the Mill and became the 100% owner and operator of the Mill. In 1995, EFN and its affiliates went into bankruptcy, and the Mill was purchased by International Uranium (USA) Corporation ("IUSA") and its affiliates in May 1997, at which time IUSA became operator of the Mill. In 2006, IUSA changed its name to Denison Mines (USA) Corp. ("Denison"), as a result of a merger between IUSA's parent company, International Uranium Corporation, and another company, Denison Mines Inc. Denison is the current operator of the Mill.

Whether the Mill is Existing, New or has Plans for Reactivating any Operations that have been Curtailed

As stated above, the Mill is an existing facility. During all of the ownership periods described above, there were no instances when activities at the Mill were permanently curtailed, and therefore, there are no planned re-activations of curtailed activities. However, the Mill has operated on a campaign basis over the years, depending on market conditions and available ores, with periods of down time between campaigns.

The Mill produces uranium in the form of U_3O_8 and vanadium, principally in the form of V_2O_5, as a co-product from its uranium/vanadium ores. Historical production activity at the Mill is shown in Table 1 below:

Table 1-Historic Mill Production

Year(s)	Received Ore (Tons)	Production	
		lbs. U_3O_8	lbs. V_2O_5
1977-1983	1,511,544	6,005,721	13,008,155
1984	0	0	0
1985-1990	2,037,209	18,759,338	18,943,167
1991-1994	0	0	0
1995	163,046	1,472,614	0
1996	43,553	661,722	0
1997	1,995	619,193	0
1998	63,296	3,000	0
1999	90,308	652,100	1,512,801
2000-2001	0	0	0
2002	135,724	0	0
2003	36,469	0	0
2004	7,594	0	0
2005	2,399	46,092	0
2006	3,185	230,959	0
2007	76,889	254,442	0
2008	265,228	888,574	1,225,017

c. *The number and size (in acres), dimensions, locations within the facility or plant site, capacity in gallons and lining material of each "existing mill impoundment", as that term is used in 40 C.F.R. Subpart W, and any other waste holding areas such as evaporation or settling ponds.*

Denison Response:

<u>Number of "Existing Impoundments" and any Other Waste Holding Areas such as Evaporation or Settling Ponds</u>

At 40 CFR Subpart W an "existing impoundment" is defined as "any uranium mill tailings impoundment which is licensed to accept additional tailings and is in existence as of December 15, 1989."

In Denison's case only Cells 2 and 3 meet that definition. Cell 2 was in existence and licensed to accept tailings as of December 15, 1989. Cell 2 is currently at capacity and is not authorized to receive additional tailings at this time. Cell 2 is therefore not in operation and is in the beginning stage of final closure. Cell 3 was also in existence and licensed to accept tailings as of December 15, 1989. Cell 3 is currently near capacity but is still authorized and continues to receive tailings. Cell 3 is therefore currently in operation.

Cell 4A was constructed in 1989, with substantial completion on November 30, 1989. However, it was not licensed for use by NRC until March 1, 1990. Cell 4A was therefore not licensed to accept tailings as of December 15, 1989 and is therefore not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. Cell 4A was re-lined in 2007/2008 and was authorized for use on September 17, 2008 by the Executive Secretary. Cell 4A is currently in use for the receipt of tailings. Copies of NRC's March 1, 1990 approval letter and the Executive Secretary's September 17, 2008 approval letter are enclosed with this letter.

Cell 1 does not accept tailings for disposal and only serves as an evaporation pond. It is therefore not a tailings impoundment. Upon Mill final closure, all of the solutions and any residual crystals in Cell 1, as well as the Cell 1 liner and any contaminated underlay will be disposed of in one of the Mill's active tailings impoundments. As a result, any solutions placed in Cell 1 will not be disposed of in that cell, but will ultimately be disposed of in one of the Mill's tailings impoundments. Upon site closure, Cell 1 will no longer exist.[1]

Cell Dimensions and Capacities

The size (in acres), dimensions and approximate capacity in gallons or tons for each of the "existing impoundments" (i.e., Cells 2 and 3), as well as Cell 1 and Cell 4A are as indicated in Table 2 below.

Table 2- Cell Specifications

Cell Designation	Surface Area (Acres)	Approximate Capacity Cubic Yds	Estimated Capacity Dry Tons or Gallons
Cell 1	55	661,500*	133,600,000 gal*
Cell 2	67	2,015,000	2,337,400 dry tons
Cell 3	71	2,345,000	2,720,200 dry tons
Cell 4A	40	1,600,000	1,856,000 dry tons

* Measured to the freeboard limit.

Cell and Pond Locations

The locations of Cells 1, 2, 3 and 4A are indicated on Figure 3.2-1 of the enclosed Reclamation Plan.

Cell Design (Cells 1, 2, and 3)

The tailings cells and Cell 1 are designed and constructed as below grade facilities. Each cell includes an engineered membrane liner, and a leak detection system. In the case of Cells 1, 2 and 3, the leak detection system is designed to provide an early warning of catastrophic liner failure. In the case of Cell 4A, the leak detection system incorporates the requirements of 40 CFR 264.221(c). Cells 1, 2 and 3 were constructed and approved for use in accordance with NRC requirements at 10 CFR Part 40, Appendix A. Cell 4A was originally constructed and

[1] It should be noted that after the solutions and crystals, liner and any contaminated underlay in Cell 1 have been cleaned up and removed to a tailings impoundment upon final closure of the Mill site, a portion of the area that had previously been Cell 1 may, after placement of a clay liner, be used for the disposal of Mill facilities and contaminated soil from the Mill area. See Sections 3.2.1 and 3.2.2.2 of the enclosed Reclamation Plan.

approved for use in accordance with NRC requirements contained in 10 CFR Part 40, Appendix A and later re-lined and re-approved by the Executive Secretary in accordance with the requirements contained in 10 CFR Part 40, Appendix A and the requirements in 40 CFR 264.221.

The major design elements, including a description of the liner material for Cells 1, 2, 3 and 4A are set out below.

a) Cell 1

Cell 1 is not a tailings impoundment, so it is not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. However, a description of its major design elements is included here for completeness.

1) Cross-valley Dike and East Dike – constructed on the south side of the pond of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of about 5,620 ft above mean sea level (amsl). A dike of similar design was constructed on the east margin of the pond, which forms a continuous earthen structure with the south dike. The remaining interior slopes are cut-slopes at 3:1 grade.

2) Liner System - including a single 30 mil polyvinyl chloride ("PVC") flexible membrane liner ("FML") constructed of solvent welded seams on a prepared sub-base. Top elevation of the FML liner is 5,618.5 ft amsl on both the south dike and the north cut-slope. A protective soil cover layer was constructed immediately over the FML with a thickness of 12-inches on the cell floor and 18-inches on the interior sideslope.

3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as an FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike. This pipe serves as the Cell's leak detection system.

b) Cell 2

1) Cross-valley Dike – constructed at the south margin of Cell 2 of native granular materials with a 3:1 slope, a 20-foot crest width, and crest elevation of about 5,615 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 1 south dike forms the north margin of Cell 2, with a crest elevation of 5,620 ft amsl.

2) Liner System – includes a single 30 mil PVC FML constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML in Cell 2 is 5,615.0 ft and 5,613.5 ft amsl on the north and south dikes, respectively. The Cell 2 FML is independent of all other cell FMLs. Immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils.

3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as an FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of

the cross-valley dike. This pipe serves as the Cell's leak detection system.

4) Slimes Drain Collection System immediately above the FML a nominal 12-inch thick protective blanket layer was constructed of native silty-sandy soil. On top of this protective blanket, a network of 1.5-inch PVC perforated pipe laterals was installed on a grid spacing interval of about 50-feet. These pipe laterals gravity drain to a 3-inch diameter perforated PVC collector pipe which also drains toward the south dike and is accessed from the ground surface via a 24-inch diameter, vertical non-perforated high density polyethylene ("HDPE") access pipe. Each run of lateral drainpipe and collector piping was covered with a 12 to 18-inch thick berm of native granular filter material. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 24-inch diameter HDPE access pipe.

c) Cell 3

1) Cross-valley Dike – constructed at the south margin of Cell 3 of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of 5,610 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 2 south dike forms the north margin of Cell 3, with a crest elevation of 5,615 ft amsl.

2) Liner System – includes a single 30 mil PVC FML constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML in Cell 3 is 5,613.5 ft and 5,608.5 ft amsl on the north and south dikes, respectively. Said Cell 3 FML is independent of all other cell FMLs.

3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as an FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike. This pipe serves as the Cell's leak detection system.

4) Slimes Drain Collection Layer and System – immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils (70%) and dewatered and cyclone separated tailings sands from the mill (30%). On top of this protective blanket, a network of 3-inch PVC perforated pipe laterals was installed on approximately 50-foot centers. This pipe network gravity drains to a 3-inch perforated PVC collector pipe which also drains toward the south dike, where it is accessed from the ground surface by a 12-inch diameter, inclined HDPE access pipe. Each run of the 3-inch lateral drainpipe and collector pipe was covered with a 12 to 18-inch thick berm of native granular filter media. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 12-inch diameter inclined access pipe.

d) Cell 4A

Cell 4A was initially designed and constructed in 1989 and placed into operation in March 1990, in accordance with the requirements of 10 CFR Part 40 Appendix A and was approved by NRC. Cell 4A is not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254, because it was not licensed for use until March 1990. However, a description of its major design elements is included here for completeness.

Unlike Cells 1, 2 and 3, Cell 4A was originally designed with a one-foot clay liner beneath the HDPE liner and leak detection system. However, the HDPE liner in Cell 4A experienced seam degradation and damage, as it was only used for a short period of time in 1990 for the disposal of raffinates and had not been used since 1990. In 2001, the calculated flow rate in the leak detection system for Cell 4A exceeded the one gallon per minute maximum permitted flow rate set out in condition 11.3(d) of the Mill's NRC Source Material License No. SUA-1358, and notice was provided to NRC and procedures were followed as required under that license condition. A copy of the Mill's Source Material License No. SUA-1358 (the "Source Material License") is enclosed with this letter.

The raffinates, resulting crystals, and radioactive solids have been removed from Cell 4A, and Denison has re-lined the cell. The design and construction of the Cell 4A re-lining was approved by the Executive Secretary under Part I.H.15 of the Mill's State of Utah Ground Water Discharge Permit No. UGW370004 (the "Ground Water Discharge Permit"). A copy of the Ground Water Discharge Permit is enclosed with this letter.

The major design elements, including a description of the liner material for Cell 4A are set out below.

1) Dikes – consisting of existing earthen embankments of compacted soil, constructed by the Mill operator in 1989, and composed of four dikes, each including a 15-foot wide road at the top (minimum). On the north, east, and south margins these dikes have slopes of 3H to 1V. The west dike has a slope of 2H to 1V. Width of these dikes varies. Each has a minimum crest width of at least 15 feet to support an access road. Base width also varies from 89-feet on the east dike (with no exterior embankment), to 211-feet at the west dike.

2) Foundation – including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90%. The floor of Cell 4A has an average slope of 1% that grades from the northeast to the southwest corners.

3) Tailings Capacity – the floor and inside slopes of Cell 4A encompass about 40 acres and have a maximum capacity of about 1.6 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).

4) Liner and Leak Detection Systems – including the following layers, in descending order:

   a) Primary FML – consisting of an impermeable 60 ml HDPE membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4A floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).

   b) Leak Detection System – includes a permeable HDPE geonet fabric that extends across the entire area under the primary FML in Cell 4A, and drains to a leak detection sump in the southwest corner. Access to the leak detection sump is via an

18-inch inside diameter (ID) HDPE pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe is surrounded with a gravel filter set in the leak detection sump, having dimensions of 10 feet by 10 feet by 2 feet deep. In turn, the gravel filter layer is enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.

c) Secondary FML – consisting of an impermeable 60-mil HDPE membrane found immediately below the leak detection geonet. This second FML also extends across the entire Cell 4A floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.

d) Geosynthetic Clay Liner – consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4A, the Permittee demonstrated that the GCL has achieved a moisture content of at least 140% by weight.

5) Slimes Drain Collection System – including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:

a) Horizontal Strip Drain System – is installed in a herringbone pattern across the floor of Cell 4A that drains to a "backbone" of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

b) Horizontal Slimes Drain Collection Pipe System – includes a "backbone" piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the "backbone" to the slimes drain system and runs from the far northeast corner downhill to the far southwest corner of Cell 4A where it joins the slimes drain access pipe.

c) Slimes Drain Access Pipe – consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4A at the southwest corner, above the primary FML. This pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.

6) North Dike Splash Pads – three 20-foot wide splash pads have been constructed on the north dike to protect the primary FML from abrasion and scouring by tailings slurry. These pads consist of an extra layer of 60 mil HDPE membrane that was installed in the anchor trench and placed down the inside slope of Cell 4A, from the top of the dike, under the inlet pipe, and down the inside slope to a point 5-feet beyond the toe of the slope.

7) Emergency Spillway – a concrete lined spillway was constructed near the western corner of the north dike to allow emergency runoff from Cell 3 into Cell 4A. This spillway was limited to a 6-inch reinforced concrete slab set directly over the primary FML in a 4-foot deep trapezoidal channel. No other spillway or overflow structure was constructed at Cell 4A. All stormwater runoff and tailings wastewaters not retained in Cells 1, 2, and 3, will be managed and contained in Cell 4A, including the Probable Maximum Precipitation and flood event.

d. *For each existing mill impoundment, evaporation pond, and settling pond indentified in response to request 3.c., identify the date(s) each was:*
   i. *Constructed;*
   ii. *Used for the continued placement of new tailings;*
   iii. *Placed on "standby status; and*
   iv. *Closed, and during what periods they were operational.*

Denison Response:

The information requested is provided in Table 3 below. For completeness, we have also included information for Cell 1, which is an evaporation pond and is not a tailings impoundment, and for Cell 4A, which is not an "existing impoundment":

Table 3-Cell Construction and Operating Periods

Cell Designation	Date of Final Construction	Tailings Placement Period	Period of Standby Status	Date closed
Cell 1	1981	Used as an evaporative pond from 1981 to the present. Tailings have not been disposed of in Cell 1	None	NA
Cell 2	1980	1980-Mid 1980's	1984	Final Closure Process began in 2008[2]
Cell 3	1982	1982-Present[3]	1984, 1991-1994, 2000-2001	NA

[2] Cell 2 no longer receives tailings but has been provided with an interim cover as the first phase of the final closure process.
[3] Cell 3 was used for evaporative purposes until the solids capacity in Cell 2 had been utilized, at which time tailings solids were discharged into Cell 3.

Cell Designation	Date of Final Construction	Tailings Placement Period	Period of Standby Status	Date closed
Cell 4A	1989	1990	1991 Until re-lining in 2008	NA
Cell 4A Re-lined	2008	2008 to present	None	NA

4. *For each existing mill impoundment, evaporation pond, and settling pond identified in response to 3.d. above*
   a. *identify whether the "continuous disposal method", as defined in 40 C.F.R. Section 61.252(b)(2), is used;*

Denison Response:

The Mill has never used the "continuous disposal method" for tailings disposal.

   b. *describe the mechanical methods used to dewater tailings, the process used to dispose of tailings, the precise location of any and all disposal areas used for dewatered tailings, and the method of covering such tailings;*

Denison Response:

The Mill has never used the "continuous disposal method" for tailings disposal.

   c. *Provide all disposal records maintained by you, including any records that reflect the manner of disposal and method of covering such tailings;*

Denison Response:

Denison does not maintain active disposal records for typical production scenarios. Instead, the tailings resulting from the production periods described in answer 3.b. (Table 1) were disposed of into the tailings impoundments that were operating during those periods, as described in answer 3.d. (Table 3).

The Mill utilizes local soil as interim cover for tailings sands that are exposed above the pond solution level. These soils have natural background levels of activity and are deposited uniformly over the area of concern in order to reduce radon emanation at tailings "beach" areas. When a Cell ceases operations and begins final closure, such interim cover is extendaed over the entire surface area of the Cell. Such interim cover is the "minimum three feet of random fill (platform fill)" required under the Mill's Reclamation Plan. A copy of the Mill's Reclamation Plan is enclosed with this letter.

Annual testing in accordance with 40 CFR 61, Subpart W has demonstrated the success of this effort in maintaining radon emissions below the 20 p/Ci/m^2-s standard.

d. provide all emissions data collected by you, or anyone working on your behalf, that show that emissions from disposed materials comply with the requirements in 40 C.F.R. § 40 61.252(a);

Denison Response:

The results of the radon emission tests (i.e., annual NESHAPs Reports) conducted since the implementation of testing in 1992 and filed with EPA annually are enclosed with this letter.

e. provide information to demonstrate and describe the method of complying with the requirement that there be no more than 10 acres uncovered at any one time, as specified in 40 C.F.R 40, Section 61.252(b)(2);

Denison Response:

The Mill has never used the "continuous disposal method" for tailings disposal. Therefore, the 10-acre requirement set out in 40 CFR 61.252(b)(2) is inapplicable to the Mill at this time.

f. provide proof that your activities comport with the requirements of EPA regulations found at 40 C.F.R. § 192.32(a), including the identification of pertinent documents and correspondence from the Nuclear Regulatory Commission;

Denison Response:

Congress created Title II of the Uranium Mill Tailings Radiation Control Act of 1978 ("UMTRCA") to regulate the management and disposition of uranium mill tailings and related wastes at active mill tailings sites. UMTRCA amended the Atomic Energy Act of 1954 ("AEA") by adding the definition of 11e.(2) byproduct material[4], by adding Section 83 of the AEA[5], which requires that mill tailings sites must be transferred to the United States Department of Energy (or a willing State) for long-term custody and maintenance, and by adding Sections 84[6] and 275[7] of the AEA, which give NRC broad authority to regulate the radiological and non-radiological aspects of mill tailings sites, in accordance with general standards promulgated by EPA and specific regulatory requirements established by NRC.

In 1980, NRC promulgated its 10 CFR Part 40, Appendix A Criteria[8], based upon the findings in its Final Generic Environmental Impact Statement On Uranium Milling set forth in NUREG-0706.[9]

In 1983, EPA issued its general standards for active uranium mill sites at 40 CFR 192.32(a).[10] In 1985, NRC amended its earlier 1980 Criteria to conform them to EPA's generally applicable standards, [11] although many of the Appendix A Criteria remained unchanged.

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[4] *See* 42 U.S.C. 2014.
[5] *See* 42 U.S.C. 2113.
[6] *See* 42 U.S.C. 2114.
[7] *See* 42 U.S.C. 2022.
[8] 45 Fed. Reg. 65,521 (1980).
[9] NUREG-0706, Final Generic Environmental Impact Statement on Uranium Milling, (September, 1980).

NRC determined that the Mill was operating in compliance with the requirements of 10 CFR Part 40, Appendix A, and hence in compliance with the standards established in 40 CFR 192.32(a) (as implemented by NRC), by virtue of renewing the Mill's Source Material License in 1997. A copy of the Mill's Source Material License is enclosed with this letter.

The State of Utah became an Agreement State for the regulation of uranium mills under Section 274 of the AEA in August of 2004. Section 274(d) of the AEA provides that NRC shall only enter into an Agreement with a State under Section 274, if among other things NRC finds that the State program is in accordance with the requirements of subsection 274(o) of the AEA. Subsection 274(o) provides that in licensing uranium mill's the State shall require "compliance with standards which shall be adopted by the State for the protection of the public health, safety, and the environment from hazards associated with such material which are equivalent, to the extent practicable, or more stringent than, standards adopted and enforced by the Commission for the same purpose, *including requirements and standards promulgated by the Commission and the Administrator of the Environmental Protection Agency pursuant to sections 83, 84, and 275,*" [emphasis added].

Accordingly, upon granting the State of Utah Agreement State status for uranium mills in August 2004, NRC determined that the State of Utah's regulatory program contained standards equivalent to or more stringent than the standards established by NRC (implementing standards set by EPA under 40 CFR 192.32).

Upon the State of Utah becoming an Agreement State for uranium mills in 2004, the Mill's Source Material License was replaced by the Mill's Radioactive Materials License and the Mill's Ground Water Discharge Permit, copies of which are enclosed with this letter. The Mill's Radioactive Materials License was up for renewal in February 2007, and is in the process of timely renewal. The Ground Water Discharge Permit is up for renewal in March 2010. The Mill's Radioactive Materials License and Ground Water Discharge Permit authorize all Mill activities, including the disposal of tailings in the operating tailings impoundments and the use of Cell 1 as an evaporation pond.

Ongoing compliance with the standards set by NRC (implementing EPA's standards in 40 CFR 192.32) is therefore determined by UDEQ through its administration of the Mill's Radioactive Materials License and Ground Water Discharge Permit and through the administration of the NESHAPS Program at the Mill. The State's continued authorization of Mill activities in accordance with its Radioactive Materials License and Ground Water Discharge Permit is therefore proof that the Mill's activities comport with the requirements of EPA regulations found at 40 CFR 192.32(a), as implemented by NRC.

However, even though compliance with the standards set out in 40 CFR 192.32(a), as implemented by NRC, are determined by UDEQ, the following discussion will address the various requirements of 40 CFR 192.32(a):

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[10] 48 Fed. Reg. 45,926 (1983) (codified at 40 CFR 192.30-.43).
[11] 50 Fed. Reg. 41,852 (1985).

(a)(1) Surface impoundments (except for an existing portion) subject to this subpart must be designed, constructed, and installed in such manner as to conform to the requirements of §264.221 of this chapter, except that at sites where the annual precipitation falling on the impoundment and any drainage area contributing surface runoff to the impoundment is less than the annual evaporation from the impoundment, the requirements of §264.228(a)(2)(iii)(E) referenced in §264.221 do not apply.

Cells 2 and 3 were constructed prior to January 1, 1983, the date of promulgation of 40 CFR 192.32. Cell 1 is an evaporation pond and is not a tailings impoundment, and in any event was constructed prior to January 1, 1983. Nevertheless, Cells 1, 2 and 3 each comply with the requirements of 40 CFR 264.221(a). The major design elements for Cells 1, 2 and 3 are set out in the responses to question 3.c. above, and demonstrate that:

- each Cell has a liner that was designed, constructed, and installed to prevent any migration of wastes out of the impoundment or pond to the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the impoundment or pond, as required by 40 CFR 264.221(a);
- the PVC liner was constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility, as required by 40 CFR 264.221(a);
- the PVC liner was constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation, as required by 40 CFR 264.221(b), and all as determined by NRC in its review and approval of the construction of the cells;
- each Cell has a liner that was placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift, as required by 40 CFR 264.221(a)(2); and
- each Cell has a liner that was installed to cover all surrounding earth likely to be in contact with the waste or leachate, as required by 40 CFR 264.221(a)(3).

The foregoing standards set out in 40 CFR 264.221(a) were incorporated, almost word for word, by NRC in Criteria 5A(1) and 5A(2) of 10 CFR Part 40, Appendix A.

Cell 4A was constructed after January 1, 1983, and relined in 2007/2008. The original construction complied with the requirements of 10 CFR Part 40, Appendix A, as determined by NRC in approving that cell for use. Because Cell 4A was originally constructed prior to January 29, 1992, the original liner design for Cell 4A did not follow all of the standards set out in 40 CFR 264.221(c). However, as the original liner construction was replaced, the discussion below relates to Cell 4A in its current form, which was approved by the Executive Secretary and which complies with all of the standards set out in 40 CFR 264.221 as well as the standards set out in 10 CFR Part 40, Appendix A. The major design elements for Cell 4A are set out in the responses to question 3.c. above, and demonstrate that:

- Cell 4A has two or more liners and a leachate collection and removal system between such liners, as required by 40 CFR 264.221(c);
- The top liner is 60 ml HDPE and has been designed and constructed of materials to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period, as required by 40 CFR 264.221(c)(1)(i)(A);
- Cell 4A has a composite bottom liner, consisting of at least two components. The upper component is 60 ml HDPE and is designed and constructed of materials to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component is a geoclay liner that is designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur, as required by 40 CFR 264.221(c)(1)(i)(B);
- The liners comply with the criteria discussed above for Cells 1, 2 and 3, as required by 40 CFR 264.221(c)(1)(ii);
- The leachate collection and removal system between the liners and immediately above the bottom composite liner is also a leak detection system. This leak detection system is capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practical time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure period, as required by 40 CFR 264.221(c)(2);
- The Ground Water Discharge Permit requires that the operator shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner (see Parts I.D.6(a) and (b) of the Ground Water Discharge Permit, a copy of which is enclosed with this letter), as required by 40 CFR 264.221(c)(3);
- The leak detection system is located completely above the seasonal high water table (which is located at least 40 feet below the bottom of the cells), as required by 40 CFR 264.221(c)(4); and
- The design and construction of the new liner system were approved by the Executive Secretary, as contemplated by 40 CFR 264.221(d).

Cells 2, 3 and 4A as well as Cell 1 have each been designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment and human error, as required by 40 CFR 264.221(g). Part I.D.3(c) of the Ground Water Discharge Permit prohibits placement of tailings into Cells 2, 3 and 4A above the flexible membrane liner in those cells. The Ground Water Discharge Permit and the Radioactive Materials License also set freeboard limits for solutions in all cells that take into account wind and wave action and rainfall storm events (see Parts I.D.2 and I.D.6(d) of the Ground Water Discharge Permit and condition 10.3 of the Mill's Radioactive Materials License).

The dikes of Cells 2, 3 and 4A as well as Cell 1 are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes, even without presuming that the liner system will function without leakage during the active life of the unit, as required by 40 CFR 264.221(h). In addition to the initial approval of the dikes by the NRC, the dikes are inspected every five years by the State Engineer.

The Ground Water Discharge Permit and Radioactive Materials License specify all design and operating practices that are necessary to ensure that the foregoing requirements are satisfied, as required by 40 CFR 264.221(i).

(2) Uranium byproduct materials shall be managed so as to conform to the ground water protection standard in §264.92 of this chapter, except that for the purposes of this subpart:

(i) To the list of hazardous constituents referenced in §264.93 of this chapter are added the elements molybdenum and uranium;

(ii) To the concentration limits provided in Table 1 of §264.94 of this chapter are added the radioactivity limits in Table A of this subpart;

(iii) Detection monitoring programs required under §264.98 to establish the standards required under §264.92 shall be completed within one (1) year of promulgation;

(iv) The regulatory agency may establish alternate concentration limits (to be satisfied at the point of compliance specified under §264.95) under the criteria of §264.94(b), provided that, after considering practical corrective actions, these limits are as low as reasonably achievable, and that, in any case, the standards of §264.94(a) are satisfied at all points at a greater distance than 500 meters from the edge of the disposal area and/or outside the site boundary, and

(v) The functions and responsibilities designated in Part 264 of this chapter as those of the "Regional Administrator" with respect to "facility permits" shall be carried out by the regulatory agency, except that exemptions of hazardous constituents under §264.93(b) and (c) of this chapter and alternate concentration limits established under §264.94(b) and (c) of this chapter (except as otherwise provided in §192.32(a)(2)(iv)) shall not be effective until EPA has concurred therein.

NRC determined compliance with the foregoing requirements by issuing the Mill's original Source Material License, as amended from time to time. Upon the State of Utah becoming an Agreement State, NRC determined that the State's groundwater protection regulations are equivalent or stricter than the standards set by 40 CFR 264.92, as implemented by NRC. The State enforces compliance with its groundwater protection regulations through the Mill's Ground Water Discharge Permit, a copy of which is enclosed with this letter. The Mill has not applied for any alternate concentration limits at its points of compliance.

(3)(i) Uranium mill tailings piles or impoundments that are nonoperational and subject to a license by the Nuclear Regulatory Commission or an Agreement State shall limit releases of radon-222 by emplacing a permanent radon barrier. This permanent radon barrier shall be constructed as expeditiously as practicable considering technological feasibility (including factors beyond the control of the licensee) after the pile or impoundment ceases to be operational. Such control shall be carried out in accordance with a written tailings closure plan (radon) to be incorporated by the Nuclear Regulatory Commission or Agreement State into individual site licenses.

(ii) The Nuclear Regulatory Commission or Agreement State may approve a licensee's request to extend the time for performance of milestones if, after providing an opportunity for public participation, the Nuclear Regulatory Commission or Agreement State finds that compliance with the 20 pCi/m^2-s flux standard has been demonstrated using a method approved by the NRC, in the manner required in 192.32(a)(4)(i). Only under these circumstances and during the period of the extension must compliance with the 20 pCi/m^2-s flux standard be demonstrated each year.

(iii) The Nuclear Regulatory Commission or Agreement State may extend the final compliance date for emplacement of the permanent radon barrier, or relevant milestone, based upon cost if the new date is established after a finding by the Nuclear Regulatory Commission or Agreement State, after providing an opportunity for public participation, that the licensee is making good faith efforts to emplace a permanent radon barrier; the delay is consistent with the definition of "available technology" in 192.31(m); and the delay will not result in radon releases that are determined to result in significant incremental risk to the public health.

(iv) The Nuclear Regulatory Commission or Agreement State may, in response to a request from a licensee, authorize by license or license amendment a portion of the site to remain accessible during the closure process to accept uranium byproduct material as defined in section 11(e)(2) of the Atomic Energy Act, 42 U.S.C. 2014(e)(2), or to accept materials similar to the physical, chemical and radiological characteristics of the in situ uranium mill tailings and associated wastes, from other sources. No such authorization may be used as a means for delaying or otherwise impeding emplacement of the permanent radon barrier over the remainder of the pile or impoundment in a manner that will achieve compliance with the 20 pCi/m^2-s flux standard, averaged over the entire pile or impoundment.

(v) the Nuclear Regulatory Commission or Agreement State may, in response to a request from a licensee, authorize by license or license amendment a portion of a pile or impoundment to remain accessible after emplacement of a permanent radon barrier to accept uranium byproduct material as defined in section 11(e)(2) of the Atomic Energy Act, 42 U.S.C. 2014(e)(2), if compliance with the 20 pCi/m^2-s flux standard of 192.32(b)(1)(ii) is demonstrated by the licensee's monitoring conducted in a manner consistent with 192.32(a)(4)(i). Such authorization may be provided only if the Nuclear Regulatory Commission or Agreement State makes a finding, constituting final agency action and after providing an opportunity for public participation, that the site will continue to achieve the 20 pCi/m^2-s flux standard when averaged over the entire impoundment.

Tailings Cell 2 is the only non-operational tailings impoundment at the Mill. It began the first phase of final closure in 2008 with the extension of interim cover over all of its surface area. Tailings had not been deposited into Cell 2 for several years prior to 2008. However, a small area of the Cell remained open to receive Mill site trash and other wastes, as permitted by condition 10.4 of the Mill's Radioactive Materials License. That small area was closed and covered with interim fill in 2008.

Since 1992, however, annual NESHAPs monitoring of Cell 2 has taken place, which has indicated that, with a few exceptions, the Cell has been in compliance with the 20 pCi/m^2-s radon-222 emission standard when averaged over the entire impoundment. The NESHAPs Report for 2008, a copy of which is enclosed with this letter, indicates that the interim cover on Cell 2 is sufficient to maintain radon-222 emissions to below the 20 pCi/m^2-s standard.

Final cover will be placed on Cell 2 in accordance with the Mill's Reclamation Plan, once the tailings have been dewatered and settled. A copy of the Mill's Reclamation Plan is enclosed with this letter. It is expected to take several years before the final cover can be placed on the Cell. In the meantime, the interim cover will ensure that the radon emission standard is satisfied.

(4)(i) Upon emplacement of the permanent radon barrier pursuant to 40 CFR 192.32(a)(3), the licensee shall conduct appropriate monitoring and analysis of the radon-222 releases to demonstrate that the design of the permanent radon barrier is effective in limiting releases of radon-222 to a level not exceeding 20 pCi/m^2-s as required by 40 CFR 192.32(b)(1)(ii). this monitoring shall be conducted using the procedures described in 40 CFR part 61, Appendix B, Method 115, or any other measurement method proposed by a licensee that the Nuclear Regulatory Commission or Agreement State approves as being at least as effective as EPA Method 115 in demonstrating the effectiveness of the permanent radon barrier in achieving compliance with the 20 pCi/m^2-s flux standard.

The 20 pCi/m^2-s radon-222 standard is being satisfied with the interim cover alone. There is no question that the final cover, which will include the addition of several additional feet of cover, will also comply with that standard. All testing has been and will continue to be performed by the 40 CFR Part 61, Appendix B, Method 115.

(4)(ii)When phased emplacement of the permanent radon barrier is included in the applicable tailings closure plan (radon), then radon flux monitoring required under §192.32(a)(4)(i) shall be conducted, however the licensee shall be allowed to conduct such monitoring for each portion of the pile or impoundment on which the radon barrier has been emplaced by conducting flux monitoring on the closed portion.

Radon flux monitoring is performed on Cells 2 and 3 annually in accordance with 40 CFR Part 61, Appendix B, Method 115 and 192.32(a)(4)(ii).

(5) Uranium byproduct materials shall be managed so as to conform to the provisions of:

(i) Part 190 of this chapter, "Environmental Radiation Protection Standards for Nuclear Power Operations"

40 CFR 190.10(a) provides that operations from facilities such as the Mill shall be conducted in such a manner as to provide reasonable assurance that: "The annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as the result of planned discharges of radioactive materials, radon and its daughters excepted, to the general environment from uranium fuel cycle operations and to radiation from these operations."

The Mill has demonstrated compliance with this requirement originally using NRC's MILDOS code for estimating environmental radiation doses for uranium recovery operations (Strenge and Bender 1981) and later by use of the updated MILDOS AREA code (Argonne 1998). This analysis was most recently performed using the MILDOS AREA code in 2007 and submitted to UDEQ in support of the Mill's 2007 Radioactive Materials License Renewal Application. A copy of that MILDOS AREA analysis is enclosed with this letter.

The analysis under both the MILDOS and MILDOS AREA codes assumed the Mill to be processing high grade Arizona Strip ores at full capacity (which has yet to be achieved in practice over an entire year), and calculated the concentrations of radioactive effluents at individual receptor locations around the Mill, including at the location of the member of the public most likely to receive the highest dose from Mill operations. The modeling indicated that even with these very conservative assumptions the dose to any member of the public did not come close to exceeding the standards set out in 40 CFR 190.10(a).

(ii) Part 440 of this chapter, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory."

The Mill is designed not to discharge any pollutants to ground water. The Mill's Ground Water Discharge Permit is intended to protect against any potential discharges to ground water. The Mill is also designed not to discharge any process wastewater to navigable waters. There are no navigable waters in the vicinity of the Mill that could be impacted by Mill operations.

(6) The regulatory agency, in conformity with Federal Radiation protection Guidance (FR, May 18, 1960, pgs. 4402-4403), shall make every effort to maintain radiation doses from radon emissions from surface impoundments of uranium byproduct materials as far below the Federal Radiation Protection Guides as is practicable at each licensed site.

The Mill is required by NRC Regulatory Guide 8.31 and Utah Administrative Code R313-15-101(2) to employ the As Low As is Reasonably Achievable ("ALARA") concept to all Mill operations in order to maintain doses from radiation to Mill workers and members of the public as low as reasonably achievable. This includes maintaining radiation doses from radon emissions from surface impoundments of uranium byproduct materials as far below the Federal Radiation Protection Guides as is practicable.

The Mill's success in its efforts to keep radon emissions from its tailings impoundments as low as reasonably achievable is evidenced by its recent NESHAPs results for 2008, which indicate that the average radon-222 flux for Cells 2 and 3 were 3.9 and 3.1 pCi/m^2-s, respectively, well below the 20 pCi/m^2-s standard.

g. *Provide a copy of all construction and modification applications required by 40 C.F.R. §61.07, a copy of all notifications of startup pursuant to §61.09, and a copy of any approvals issued pursuant to §61.08 or any state authority, including the identification of the persons or entities by whom these approvals were issued (state or federal officials).*

Denison Response:

The Approval Order (DAQE-AN0112050008-08) issued by the State of Utah pertaining to air emissions at the Mill is enclosed with this letter. Also, enclosed is a notice pursuant to Condition 9 of that Order which pertains to the requirements of 40 CFR 61.09. Due to changes in operatorship of the Mill over the years and other factors, Denison has not been able to locate all potentially relevant files at this time. Denison will continue to search for files and will provide copies of any other construction and modification applications and notifications under 40 CFR 61.08 or 61.09 that it is able to locate.

h. *provide copies of any permits that have been applied for and/or received under the Clean Air Act;*

Denison Response:

The Approval Order (DAQE-AN0112050008-08) issued by the State of Utah pertaining to air emissions at the Mill is enclosed with this letter.

i. *provide copies of any licenses or license applications for construction or operation issued by or filed with the NRC;*

Denison Response:

A copy of the Mill's Source Material License issued by the NRC is enclosed with this letter. As discussed in the response to question 4.f. above, the Source Material license was replaced by State of Utah Radioactive Materials License UT 1900479 and State of Utah Ground Water Discharge Permit No. UGW370004, copies of which are enclosed with this letter.

j. *provide copies of any licenses issued by states under state authority;*

Denison Response:

State of Utah Radioactive Materials License UT 1900479 and State of Utah Ground Water Discharge Permit No. UGW370004 are enclosed with this letter. Also enclosed with this letter is a copy of the Mill's air Approval Order (DAQE – AN0112050008-08).

k. *provide current license status, including an indication whether and when any license modifications are planned or have been agreed to;*

Denison Response:

Radioactive Materials License

The Mills State of Utah Radioactive Materials License is currently active. A license renewal application (and Environmental Report supporting the license renewal application) was submitted to UDEQ on February 28, 2007. The application is under "timely renewal" and, while the renewed License may include modifications, no agreements have been made nor has a specific time for renewal been specified. Specific modification of the License to accommodate different activities or modifications to the facility were not requested as an element of the renewal application.

Subsequent to the license renewal application, Denison has made two requests to UDEQ for amendments to the Mill's Radioactive Materials License:

- Radioactive Materials License conditions 10.4 and 10.5 currently authorize the Mill to dispose of site-generated non-tailings waste ("Mill Waste") into a designated area of Cell 2 and 11e.(2) byproduct material from in situ leach uranium recovery facilities ("Byproduct Material") into Cell 3, respectively. The designated area for disposal of Mill Waste in Cell 2 has now reached capacity and Cell 2 is no longer operational. Similarly, the remaining disposal area for Byproduct Material in Cell 3 is limited. By a letter dated October 30, 2008, Denison requested an amendment to its Radioactive Materials License that would authorize disposal of Byproduct Material and Mill Waste into other tailings cells at the site. This request is currently under consideration by UDEQ.
- By a letter dated December 11, 2008, Denison applied for an amendment to the Mill's Radioactive Materials License, and ancillary amendments to the Mill's Ground Water Discharge Permit, relating to the manner of calculating freeboard limits for Cells 3 and 4A. This request is currently under discussion between UDEQ and Denison.

<u>Ground Water Discharge Permit</u>

The Mill's Ground Water Discharge Permit is up for renewal on March 8, 2010. In order for the permit to be in timely renewal, a permit renewal application must be submitted by Denison at least 180 days before that date.

Two other Ground Water Discharge Permit modification actions are outstanding or pending at this time:

- As mentioned above, by a letter dated December 11, 2008, Denison applied for an amendment to the Mill's Radioactive Materials License, and ancillary amendments to the Mill's Ground Water Discharge Permit, relating to the manner of calculating freeboard limits for Cells 3 and 4A. This request is currently under discussion between UDEQ and Denison.
- UDEQ is in the process of preparing an amended version of the Ground Water Discharge Permit that will, among other things, amend the Ground Water Compliance Limits ("GWCLs") in the permit. The GWCLs were originally set in the permit as fractions of the State Ground Water Quality Standards ("GWQSs"), but the intention was to amend these interim GWCLs to take into account natural background ground water quality at the site, once Background Ground Water Quality Reports for the site had been prepared by Denison and approved by the Executive Secretary. Background Ground Water Quality Reports have in fact been prepared by Denison and approved by the Executive Secretary, and the interim GWCLs in the permit are now being modified to take the background conditions at the site into account. At the same time, the Executive Secretary is making a number of other modifications to the permit, most of which are of an administrative nature. The draft modified permit is currently under discussion between Denison and

UDEQ. Once the modifications have been set, UDEQ will publish the proposed modified version of the permit for public comment in accordance with applicable Utah rules. Denison expects that the draft modified permit will be published for comment within the next few weeks.

l. indicate whether all facilities and ponds/impoundments were constructed and are being operated in accordance with all permits and federal regulations.

Denison Response:

All facilities and ponds/impoundments have been constructed in accordance with all permits and federal regulations. By virtue of renewing the Mill's Source Material License in 1997, NRC has acknowledged that all Mill facilities have been constructed and are being operated in accordance with all permits and federal regulations.

NRC and, since August 2004, DRC have inspected the Mill regularly to confirm that the Mill is operating in accordance with all permits and applicable regulations. In addition, the State of Utah Division of Air Quality performs periodic inspections to confirm that the Mill is operating in compliance with its air Approval Order.

m. provide a description of any pollution control methods utilized by you;

Denison Response:

Groundwater

The Mill's Ground Water Discharge Permit, a copy of which is enclosed with this letter, details the methods utilized by the Mill to control any potential pollution to ground water. In addition, the manner of construction and operation of the Mill's tailings cells and evaporation pond described in the response to question 4.f. above serve as effective methods of control of potential pollution.

Air Approval Order

The pollution control methods utilized by the Mill for air emissions from facility operations, including pollution control equipment, are detailed in the Mill's Air Approval Order, a copy of which is enclosed with this letter.

Tailings Impoundments

As stated in the response to question 4.c., the Mill utilizes local soil as interim cover for tailings sands that are exposed above the pond solution level. These soils are low in activity (background levels) and are deposited uniformly over the area of concern in order to reduce radon emanation at tailings "beach" areas. In addition, the solutions in the impoundments serve as a cover for the tailings beneath the water's surface, thus virtually eliminating the release of radon to the atmosphere from ponded areas of the cells. Annual testing in accordance with 40

CFR 61, Subpart W has demonstrated the success of these operational pollution control mechanisms in maintaining radon emanations from the existing impoundments below the 20 pCi/m^2-s standard.

Other

The Mill monitors air particulate at several environmental monitoring stations. It also monitors soil and vegetation and surface water in the vicinity of the Mill to ensure that air particulate is not impacting the environment.

n. State whether each of your uranium mills and uranium in-situ leaching facilities is subject to the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Radon Emissions from Operating Mill tailings as defined under 40 C.F.R. § § 61.250 et. seq. If not, explain why not.

Denison Response:

The Mill is subject to the requirements of 40 CFR 61.250 et. seq.

5. *Submit complete results of all air and radon emission tests, emissions characterizations, or emissions studies, conducted or attempted at each facility since January 1, 1980. Indicate whether these tests were conducted as specified in 40 C.F.R. § § 61.253 and 61.255. Include with this information relevant operation parameters measured and all data recorded during these tests or studies, including the water level and moisture content, as well as how it was determined that the 'long term radon flux from the pile' was represented during time of measurement, pursuant to 40 C.F.R. 61, Appendix B, Method 115, 2.2.1.*

Denison Response:

Annual Radon Emission Tests Relating to Tailings Cells

The annual tests conducted in accordance with 40 CFR 61.253 and 61.255, as set out in the enclosed annual NESHAPs Reports, show the annual testing for radon emanations from the Mill's tailings cells. All relevant operating parameters measured and data recorded during these tests are included within the reports. As water level elevation in the pond and moisture content of the tailings at the time of the test were not required parameters, that data was not collected at the time of testing and is therefore unavailable. All measurements were reported to be in compliance with 40 CFR 61, Appendix B, Method 115 parameters and, accordingly are representative of the 'long term radon flux from the pile'.

The relative areas of pond, beach and interim cover within each cell at the time of sampling were used to determine the flux rate at that time. These conditions at the time of sampling were assumed to be representative of the average areas over the year. During periods when the Mill is inactive, there are no significant changes in these areas within each cell. During periods of operation, there can be some changes in these areas over the year, depending on the tonnages processed during the year. However, as tailings are deposited into the Cells, beach areas are covered with interim cover as soon as practicable (which generally means as soon as it is safe to use heavy equipment to cover them). As a result, the exposed beach areas are typically a fairly constant percentage of the total cell area throughout the year, even in periods of operation. Since the exposed beach areas are the largest contributor to the average radon flux from the cell, the beach area at the time of sampling will generally be representative of the beach area throughout the year, and, as a result, the annual measurements will generally be representative of the long term radon flux from the cell.

<u>Other Emission Tests</u>

The Mill has performed MILDOS and MILDOS AREA modeling relating to the Mill. These models predicted dose rates based on predicted emissions from the Mill facility. That modeling was performed at various times throughout the Mill's history, with the most recent being completed in February 2007 in connection with the Mill's 2007 Radioactive Materials License renewal application. A copy of that modeling report is enclosed with this letter.

6. Provide copies of all monthly and annual compliance reports prepared and submitted to EPA, as specified in 40 C.F.R. § 61.254, or similar reports submitted to all other regulatory agencies since 1980. To the extent, that you have not submitted any such report(s) provide the reasons for not having done so, and reasons, if any, you claim as a basis for not submitting such reports.

Denison Response:

All annual compliance reports (i.e., annual NESHAPs Reports) submitted in accordance with 40 CFR 61.254 have been included in the response to Question 4.d.

If you have any questions or require any further information, please contact the undersigned.

Yours truly,

Denison Mines (USA) Corp.

By:

David C. Frydenlund
Vice President, Regulatory Affairs and Counsel

cc: Andrew M. Gaydosh, EPA Region 8
Harold R. Roberts
Steven D. Landau
Ron F. Hochstein

Certification:

I certify under penalty of law that I have examined and am familiar with the information in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to section 113(c)(2) of the Act and 18 U.S.C. §§ 1001 and 1341.

David C. Frydenlund, Vice President, Regulatory Affairs and Counsel

EPA-5207

Angelique Diaz

To

cc

bcc

Subject UPLOAD
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- Denision response to section 114letter.pdf

DENISON MINES

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June 1, 2009

Mr. Charles Garlow, Attorney-Advisor
OECA, Air Enforcement Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave. N.W. – MC2242A
Washington, DC 20460

Dear Mr. Garlow:

Re: Request to Provide Information Pursuant to the Clean Air Act
Denison Mines (USA) Corp.-White Mesa Uranium Mill, Blanding Utah

This is Denison Mines (USA) Corp's. ("Denison's") response to the United States Environmental Protection Agency's ("EPA's") Request For Information dated February 24, 2009. Each of EPA's questions is provided below in italics, followed by Denison's response in regular font.

The individuals responsible for responding to this request are David C. Frydenlund, Vice President Regulatory Affairs and Counsel, Steven D. Landau, Manager, Environmental Affairs and Harold R. Roberts, Executive Vice President, US Operations of Denison.

1. Please list each uranium mill and uranium mill tailings impoundment located in the United States of America that has been, or is currently, owned or operated by Denison or affiliated corporations located in the United States of America. Include the exact location of each uranium mill by map and legal property description:

Denison Response:

Denison owns and operates the White Mesa Uranium Mill (the "Mill") and its tailings impoundments (Cells 2, 3 and 4A), which are located in central San Juan County Utah approximately 6 miles south of the city of Blanding (see Figures 1-1 and 1-2 of the enclosed Reclamation Plan for the Mill). Within San Juan County, the Mill site is located on fee land and mill site claims, covering approximately 5,415 acres, encompassing all or part of Sections 21, 22, 27, 28, 29, 32, and 33 of Township 37S, Range 22E, and Sections 4, 5, 6, 8, 9, and 16 of Township 38S, Range 22E, Salt Lake Base and Meridian (See Figure 1-2 of the enclosed Reclamation Plan). A full legal description of the fee lands comprising the Mill site is contained in Section 3.1 of the enclosed Reclamation Plan.

2. *Please list each uranium in-situ leaching facility located in the United States of America that has been, or is currently, owned or operated by Denison or affiliated corporations. Please include the exact location of each uranium mill by map and legal property description:*

Denison Response:

Denison does not own or operate any uranium in-situ leaching facilities in the United States of America. The location and legal description of the Mill are provided in the response to question 1.

3. *Please provide the following information for each uranium mill and uranium in-situ leaching facility identified in questions 1 and 2.*

   a. *A complete description of each uranium mill and uranium in-situ leaching facility's operational status (e.g., permanently shut down, temporarily shut down, standby status, in full or partial operation), method of operation (continuous disposal, phased disposal or other method) and methods by which compliance with the NESHAP standards, specified at 40 C.F.R. § 61.252, is ensured (meeting emission limit in Section 61.252(a) and work practices in (b) and (c)). Include a description of the type of facility (conventional, in-situ leach or combination);*

Denison Response:

The Mill is an operating conventional uranium mill. It has operated on a campaign basis over the years, depending on the availability of ores and market conditions. The Mill has been fully operational, processing conventionally mined uranium/vanadium ores, during the period from April 2008 to May 2009. Denison expects to commence another conventional ore processing campaign in 2010, depending on market conditions and available ores. In the meantime, the Mill will process alternate feed materials, which are uranium-bearing materials other than conventionally mined uranium or uranium/vanadium ores. For the three years prior to this last conventional ore run, the Mill also processed alternate feed materials. Mill staffing is typically reduced for alternate feed runs, but the Mill can nevertheless be considered to be running at full operation while processing either conventional ores or alternate feed materials.

The "method of operations" at the Mill is phased disposal of tailings. Compliance with the NESHAP standards at 40 CFR 61.252(a) is determined annually for existing impoundments (i.e., Cells 2 and 3). The annual Radon emissions for existing impoundments are measured using Large Area Activated Charcoal Canisters in conformance with 40 CFR, Part 61, Appendix B, Method 115, Restrictions to Radon Flux Measurements, (EPA, 2008). These canisters are passive gas adsorption sampling devices used to determine the flux rate of Radon-222 gas from the surface of the tailings material. For impoundments licensed for use after December 15, 1989 (i.e., Cell 4A), Denison employs the work practice standard listed at 40 CFR 61.252(b)(1) in that all tailings impoundments constructed or licensed after that date are lined, are no more than 40 acres in area and no more than two impoundments are operated for tailings disposal at any one time.

b. *A history of operation since 1979, including:*
    i. *the original date of construction of each uranium mill and uranium in-situ leaching facility;*
    ii. *the plan of operation and plans to shut-in or close active operations;*
    iii. *ownership changes; and*
    iv. *whether the uranium mill and uranium in-situ leaching facility is existing, new, or has plans for reactivating any operations that have been curtailed.*

Denison Response:

Original Date of Construction

The Mill is an existing facility. A uranium ore buying station operated at the Mill site from 1977 until the Mill was constructed. Construction of the Mill was initiated in 1979, and operations commenced in 1980 upon the issuance by the United States Nuclear Regulatory Commission ("NRC") of a source material license for the Mill in May 1980.

The Mill's original licensing by NRC contemplated the use of six cells, one of which (Cell 1) is an evaporation facility and is not used for the disposal of tailings. Construction of Cell 1 was completed in June of 1981. Construction of Cell 2 was completed in May 1980. Cell 2 is now full and has been provided with an interim cover as the beginning phase of final closure. Construction of Cell 3 was completed in September 1982. Cell 3 is nearly full but remains in service at the time of this writing.

Since Cells 2 and 3 were constructed prior to December 15, 1989, they are "existing impoundments" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. Cell 1, which was also constructed prior to December 15, 1989 is an evaporation pond and does not accept tailings for disposal. It is therefore not an "existing impoundment" within the meaning of those sections. Construction of Cell 4A was substantially completed on November 30, 1989, but was not licensed for operations until March 1990. Cell 4A is therefore not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. Cell 4A was used briefly for the disposal of raffinate solutions in 1990. The cell had not been used after 1990, and, as a result, damage occurred to the seams in the liner due to thermal stress from years of exposure to direct sunlight. Denison removed the solutions and crystals from Cell 4A in 2006, deposited them in Cell 3 and relined Cell 4A in 2007/2008. Cell 4A was approved for use in 2008 by the Executive Secretary (the "Executive Secretary") of the State of Utah Radiation Control Board, Department of Environmental Quality ("UDEQ").

Cell locations 4, 5 and 6 encompass 80 acres each but, for construction and regulatory purposes, these cell locations will be subdivided into two 40 acre cells within each designated Cell location. Thus, the 40 acre cells are numbered 4A, 4B, 5A, 5B, 6A and 6B. Of these Cells only Cell 4A has been constructed.

Cells 3 and 4A are the tailings impoundments in operation at this time. The design plans and an Environmental Report supporting the construction of Cell 4B have been submitted to and are under review by the Executive Secretary. Cell 4B will not be used for the disposal of tailings until Cell 3 ceases to be in operation (i.e., until Cell 3 is full and has been fully covered with interim cover as the beginning phase of final closure).

Plan of Operation

The plan of operation is to continue to mill uranium and uranium/vanadium ores and alternate feed materials, as market conditions permit, until all Cells have been constructed and operated to their full capacity. This progression will continue in a phased manner such that only two 40 acre tailings impoundments will be in operation for the disposal of tailings at any one time (with the exception of Cell 3, which has an area of approximately 71 acres and which was in existence and licensed for use prior to December 15, 1989). There are no plans to shut in or close active operations.

Impoundment closure will be performed in accordance with the Mill's approved Reclamation Plan, which complies with the requirements of 10 CFR Part 40, Appendix A. A copy of the Mill's Reclamation Plan is enclosed with this letter. Final closure of tailings cells will begin with placement of interim cover over all of the surface area of the tailings cells. The interim cover will limit the Radon-222 emissions to the ambient air from the cell to 20 pCi/(m^2-sec). Final closure will be completed at the time of Mill decommissioning, once the tailings have been dewatered and settled and are suitable for placement of the final cover.

Ownership Changes

The Mill has had ownership changes with time. The Mill was originally constructed by Energy Fuels Nuclear, Inc. ("EFN") and its affiliates. EFN was the original operator of the Mill. In 1984 Umetco Minerals Corporation an affiliate of Union Carbide Corporation, acquired a majority interest in the Mill and became operator of the Mill. Umetco operated the Mill until 1994 when EFN and its affiliates re-acquired Umetco's interest in the Mill and became the 100% owner and operator of the Mill. In 1995, EFN and its affiliates went into bankruptcy, and the Mill was purchased by International Uranium (USA) Corporation ("IUSA") and its affiliates in May 1997, at which time IUSA became operator of the Mill. In 2006, IUSA changed its name to Denison Mines (USA) Corp. ("Denison"), as a result of a merger between IUSA's parent company, International Uranium Corporation, and another company, Denison Mines Inc. Denison is the current operator of the Mill.

Whether the Mill is Existing, New or has Plans for Reactivating any Operations that have been Curtailed

As stated above, the Mill is an existing facility. During all of the ownership periods described above, there were no instances when activities at the Mill were permanently curtailed, and therefore, there are no planned re-activations of curtailed activities. However, the Mill has operated on a campaign basis over the years, depending on market conditions and available ores, with periods of down time between campaigns.

The Mill produces uranium in the form of U_3O_8 and vanadium, principally in the form of V_2O_5, as a co-product from its uranium/vanadium ores. Historical production activity at the Mill is shown in Table 1 below:

Table 1-Historic Mill Production

Year(s)	Received Ore (Tons)	Production	
		lbs. U_3O_8	lbs. V_2O_5
1977-1983	1,511,544	6,005,721	13,008,155
1984	0	0	0
1985-1990	2,037,209	18,759,338	18,943,167
1991-1994	0	0	0
1995	163,046	1,472,614	0
1996	43,553	661,722	0
1997	1,995	619,193	0
1998	63,296	3,000	0
1999	90,308	652,100	1,512,801
2000-2001	0	0	0
2002	135,724	0	0
2003	36,469	0	0
2004	7,594	0	0
2005	2,399	46,092	0
2006	3,185	230,959	0
2007	76,889	254,442	0
2008	265,228	888,574	1,225,017

c. *The number and size (in acres), dimensions, locations within the facility or plant site, capacity in gallons and lining material of each "existing mill impoundment", as that term is used in 40 C.F.R. Subpart W, and any other waste holding areas such as evaporation or settling ponds.*

Denison Response:

<u>Number of "Existing Impoundments" and any Other Waste Holding Areas such as Evaporation or Settling Ponds</u>

At 40 CFR Subpart W an "existing impoundment" is defined as "any uranium mill tailings impoundment which is licensed to accept additional tailings and is in existence as of December 15, 1989."

In Denison's case only Cells 2 and 3 meet that definition. Cell 2 was in existence and licensed to accept tailings as of December 15, 1989. Cell 2 is currently at capacity and is not authorized to receive additional tailings at this time. Cell 2 is therefore not in operation and is in the beginning stage of final closure. Cell 3 was also in existence and licensed to accept tailings as of December 15, 1989. Cell 3 is currently near capacity but is still authorized and continues to receive tailings. Cell 3 is therefore currently in operation.

Cell 4A was constructed in 1989, with substantial completion on November 30, 1989. However, it was not licensed for use by NRC until March 1, 1990. Cell 4A was therefore not licensed to accept tailings as of December 15, 1989 and is therefore not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. Cell 4A was re-lined in 2007/2008 and was authorized for use on September 17, 2008 by the Executive Secretary. Cell 4A is currently in use for the receipt of tailings. Copies of NRC's March 1, 1990 approval letter and the Executive Secretary's September 17, 2008 approval letter are enclosed with this letter.

Cell 1 does not accept tailings for disposal and only serves as an evaporation pond. It is therefore not a tailings impoundment. Upon Mill final closure, all of the solutions and any residual crystals in Cell 1, as well as the Cell 1 liner and any contaminated underlay will be disposed of in one of the Mill's active tailings impoundments. As a result, any solutions placed in Cell 1 will not be disposed of in that cell, but will ultimately be disposed of in one of the Mill's tailings impoundments. Upon site closure, Cell 1 will no longer exist.[1]

Cell Dimensions and Capacities

The size (in acres), dimensions and approximate capacity in gallons or tons for each of the "existing impoundments" (i.e., Cells 2 and 3), as well as Cell 1 and Cell 4A are as indicated in Table 2 below.

Table 2- Cell Specifications

Cell Designation	Surface Area (Acres)	Approximate Capacity Cubic Yds	Estimated Capacity Dry Tons or Gallons
Cell 1	55	661,500*	133,600,000 gal*
Cell 2	67	2,015,000	2,337,400 dry tons
Cell 3	71	2,345,000	2,720,200 dry tons
Cell 4A	40	1,600,000	1,856,000 dry tons

* Measured to the freeboard limit.

Cell and Pond Locations

The locations of Cells 1, 2, 3 and 4A are indicated on Figure 3.2-1 of the enclosed Reclamation Plan.

Cell Design (Cells 1, 2, and 3)

The tailings cells and Cell 1 are designed and constructed as below grade facilities. Each cell includes an engineered membrane liner, and a leak detection system. In the case of Cells 1, 2 and 3, the leak detection system is designed to provide an early warning of catastrophic liner failure. In the case of Cell 4A, the leak detection system incorporates the requirements of 40 CFR 264.221(c). Cells 1, 2 and 3 were constructed and approved for use in accordance with NRC requirements at 10 CFR Part 40, Appendix A. Cell 4A was originally constructed and

[1] It should be noted that after the solutions and crystals, liner and any contaminated underlay in Cell 1 have been cleaned up and removed to a tailings impoundment upon final closure of the Mill site, a portion of the area that had previously been Cell 1 may, after placement of a clay liner, be used for the disposal of Mill facilities and contaminated soil from the Mill area. See Sections 3.2.1 and 3.2.2.2 of the enclosed Reclamation Plan.

approved for use in accordance with NRC requirements contained in 10 CFR Part 40, Appendix A and later re-lined and re-approved by the Executive Secretary in accordance with the requirements contained in 10 CFR Part 40, Appendix A and the requirements in 40 CFR 264.221.

The major design elements, including a description of the liner material for Cells 1, 2, 3 and 4A are set out below.

a) Cell 1

Cell 1 is not a tailings impoundment, so it is not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254. However, a description of its major design elements is included here for completeness.

1) Cross-valley Dike and East Dike – constructed on the south side of the pond of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of about 5,620 ft above mean sea level (amsl). A dike of similar design was constructed on the east margin of the pond, which forms a continuous earthen structure with the south dike. The remaining interior slopes are cut-slopes at 3:1 grade.

2) Liner System - including a single 30 mil polyvinyl chloride ("PVC") flexible membrane liner ("FML") constructed of solvent welded seams on a prepared sub-base. Top elevation of the FML liner is 5,618.5 ft amsl on both the south dike and the north cut-slope. A protective soil cover layer was constructed immediately over the FML with a thickness of 12-inches on the cell floor and 18-inches on the interior sideslope.

3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as an FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike. This pipe serves as the Cell's leak detection system.

b) Cell 2

1) Cross-valley Dike – constructed at the south margin of Cell 2 of native granular materials with a 3:1 slope, a 20-foot crest width, and crest elevation of about 5,615 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 1 south dike forms the north margin of Cell 2, with a crest elevation of 5,620 ft amsl.

2) Liner System – includes a single 30 mil PVC FML constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML in Cell 2 is 5,615.0 ft and 5,613.5 ft amsl on the north and south dikes, respectively. The Cell 2 FML is independent of all other cell FMLs. Immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils.

3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as an FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of

the cross-valley dike. This pipe serves as the Cell's leak detection system.

4) Slimes Drain Collection System immediately above the FML a nominal 12-inch thick protective blanket layer was constructed of native silty-sandy soil. On top of this protective blanket, a network of 1.5-inch PVC perforated pipe laterals was installed on a grid spacing interval of about 50-feet. These pipe laterals gravity drain to a 3-inch diameter perforated PVC collector pipe which also drains toward the south dike and is accessed from the ground surface via a 24-inch diameter, vertical non-perforated high density polyethylene ("HDPE") access pipe. Each run of lateral drainpipe and collector piping was covered with a 12 to 18-inch thick berm of native granular filter material. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 24-inch diameter HDPE access pipe.

c) Cell 3

1) Cross-valley Dike – constructed at the south margin of Cell 3 of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of 5,610 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 2 south dike forms the north margin of Cell 3, with a crest elevation of 5,615 ft amsl.

2) Liner System – includes a single 30 mil PVC FML constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML in Cell 3 is 5,613.5 ft and 5,608.5 ft amsl on the north and south dikes, respectively. Said Cell 3 FML is independent of all other cell FMLs.

3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as an FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike. This pipe serves as the Cell's leak detection system.

4) Slimes Drain Collection Layer and System – immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils (70%) and dewatered and cyclone separated tailings sands from the mill (30%). On top of this protective blanket, a network of 3-inch PVC perforated pipe laterals was installed on approximately 50-foot centers. This pipe network gravity drains to a 3-inch perforated PVC collector pipe which also drains toward the south dike, where it is accessed from the ground surface by a 12-inch diameter, inclined HDPE access pipe. Each run of the 3-inch lateral drainpipe and collector pipe was covered with a 12 to 18-inch thick berm of native granular filter media. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 12-inch diameter inclined access pipe.

d) Cell 4A

Cell 4A was initially designed and constructed in 1989 and placed into operation in March 1990, in accordance with the requirements of 10 CFR Part 40 Appendix A and was approved by NRC. Cell 4A is not an "existing impoundment" within the meaning of 40 CFR 61.251(d), 61.252(a) and 61.254, because it was not licensed for use until March 1990. However, a description of its major design elements is included here for completeness.

Unlike Cells 1, 2 and 3, Cell 4A was originally designed with a one-foot clay liner beneath the HDPE liner and leak detection system. However, the HDPE liner in Cell 4A experienced seam degradation and damage, as it was only used for a short period of time in 1990 for the disposal of raffinates and had not been used since 1990. In 2001, the calculated flow rate in the leak detection system for Cell 4A exceeded the one gallon per minute maximum permitted flow rate set out in condition 11.3(d) of the Mill's NRC Source Material License No. SUA-1358, and notice was provided to NRC and procedures were followed as required under that license condition. A copy of the Mill's Source Material License No. SUA-1358 (the "Source Material License") is enclosed with this letter.

The raffinates, resulting crystals, and radioactive solids have been removed from Cell 4A, and Denison has re-lined the cell. The design and construction of the Cell 4A re-lining was approved by the Executive Secretary under Part I.H.15 of the Mill's State of Utah Ground Water Discharge Permit No. UGW370004 (the "Ground Water Discharge Permit"). A copy of the Ground Water Discharge Permit is enclosed with this letter.

The major design elements, including a description of the liner material for Cell 4A are set out below.

1) Dikes – consisting of existing earthen embankments of compacted soil, constructed by the Mill operator in 1989, and composed of four dikes, each including a 15-foot wide road at the top (minimum). On the north, east, and south margins these dikes have slopes of 3H to 1V. The west dike has a slope of 2H to 1V. Width of these dikes varies. Each has a minimum crest width of at least 15 feet to support an access road. Base width also varies from 89-feet on the east dike (with no exterior embankment), to 211-feet at the west dike.

2) Foundation – including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90%. The floor of Cell 4A has an average slope of 1% that grades from the northeast to the southwest corners.

3) Tailings Capacity – the floor and inside slopes of Cell 4A encompass about 40 acres and have a maximum capacity of about 1.6 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).

4) Liner and Leak Detection Systems – including the following layers, in descending order:

   a) Primary FML – consisting of an impermeable 60 ml HDPE membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4A floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).

   b) Leak Detection System – includes a permeable HDPE geonet fabric that extends across the entire area under the primary FML in Cell 4A, and drains to a leak detection sump in the southwest corner. Access to the leak detection sump is via an

18-inch inside diameter (ID) HDPE pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe is surrounded with a gravel filter set in the leak detection sump, having dimensions of 10 feet by 10 feet by 2 feet deep. In turn, the gravel filter layer is enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.

c) Secondary FML – consisting of an impermeable 60-mil HDPE membrane found immediately below the leak detection geonet. This second FML also extends across the entire Cell 4A floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.

d) Geosynthetic Clay Liner – consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4A, the Permittee demonstrated that the GCL has achieved a moisture content of at least 140% by weight.

5) Slimes Drain Collection System – including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:

a) Horizontal Strip Drain System – is installed in a herringbone pattern across the floor of Cell 4A that drains to a "backbone" of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

b) Horizontal Slimes Drain Collection Pipe System – includes a "backbone" piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the "backbone" to the slimes drain system and runs from the far northeast corner downhill to the far southwest corner of Cell 4A where it joins the slimes drain access pipe.

c) Slimes Drain Access Pipe – consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4A at the southwest corner, above the primary FML. This pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.

6) North Dike Splash Pads – three 20-foot wide splash pads have been constructed on the north dike to protect the primary FML from abrasion and scouring by tailings slurry. These pads consist of an extra layer of 60 mil HDPE membrane that was installed in the anchor trench and placed down the inside slope of Cell 4A, from the top of the dike, under the inlet pipe, and down the inside slope to a point 5-feet beyond the toe of the slope.

7) Emergency Spillway – a concrete lined spillway was constructed near the western corner of the north dike to allow emergency runoff from Cell 3 into Cell 4A. This spillway was limited to a 6-inch reinforced concrete slab set directly over the primary FML in a 4-foot deep trapezoidal channel. No other spillway or overflow structure was constructed at Cell 4A. All stormwater runoff and tailings wastewaters not retained in Cells 1, 2, and 3, will be managed and contained in Cell 4A, including the Probable Maximum Precipitation and flood event.

d. *For each existing mill impoundment, evaporation pond, and settling pond indentified in response to request 3.c., identify the date(s) each was:*
   i. *Constructed;*
   ii. *Used for the continued placement of new tailings;*
   iii. *Placed on "standby status; and*
   iv. *Closed, and during what periods they were operational.*

Denison Response:

The information requested is provided in Table 3 below. For completeness, we have also included information for Cell 1, which is an evaporation pond and is not a tailings impoundment, and for Cell 4A, which is not an "existing impoundment":

Table 3-Cell Construction and Operating Periods

Cell Designation	Date of Final Construction	Tailings Placement Period	Period of Standby Status	Date closed
Cell 1	1981	Used as an evaporative pond from 1981 to the present. Tailings have not been disposed of in Cell 1	None	NA
Cell 2	1980	1980-Mid 1980's	1984	Final Closure Process began in 2008[2]
Cell 3	1982	1982-Present[3]	1984, 1991-1994, 2000-2001	NA

[2] Cell 2 no longer receives tailings but has been provided with an interim cover as the first phase of the final closure process.

[3] Cell 3 was used for evaporative purposes until the solids capacity in Cell 2 had been utilized, at which time tailings solids were discharged into Cell 3.

Cell Designation	Date of Final Construction	Tailings Placement Period	Period of Standby Status	Date closed
Cell 4A	1989	1990	1991 Until re-lining in 2008	NA
Cell 4A Re-lined	2008	2008 to present	None	NA

4. *For each existing mill impoundment, evaporation pond, and settling pond identified in response to 3.d. above*
   a. *identify whether the "continuous disposal method", as defined in 40 C.F.R. Section 61.252(b)(2), is used;*

Denison Response:

The Mill has never used the "continuous disposal method" for tailings disposal.

   b. *describe the mechanical methods used to dewater tailings, the process used to dispose of tailings, the precise location of any and all disposal areas used for dewatered tailings, and the method of covering such tailings;*

Denison Response:

The Mill has never used the "continuous disposal method" for tailings disposal.

   c. *Provide all disposal records maintained by you, including any records that reflect the manner of disposal and method of covering such tailings;*

Denison Response:

Denison does not maintain active disposal records for typical production scenarios. Instead, the tailings resulting from the production periods described in answer 3.b. (Table 1) were disposed of into the tailings impoundments that were operating during those periods, as described in answer 3.d. (Table 3).

The Mill utilizes local soil as interim cover for tailings sands that are exposed above the pond solution level. These soils have natural background levels of activity and are deposited uniformly over the area of concern in order to reduce radon emanation at tailings "beach" areas. When a Cell ceases operations and begins final closure, such interim cover is extendaed over the entire surface area of the Cell. Such interim cover is the "minimum three feet of random fill (platform fill)" required under the Mill's Reclamation Plan. A copy of the Mill's Reclamation Plan is enclosed with this letter.

Annual testing in accordance with 40 CFR 61, Subpart W has demonstrated the success of this effort in maintaining radon emissions below the 20 p/Ci/m^2-s standard.

d. provide all emissions data collected by you, or anyone working on your behalf, that show that emissions from disposed materials comply with the requirements in 40 C.F.R. § 40 61.252(a);

Denison Response:

The results of the radon emission tests (i.e., annual NESHAPs Reports) conducted since the implementation of testing in 1992 and filed with EPA annually are enclosed with this letter.

e. provide information to demonstrate and describe the method of complying with the requirement that there be no more than 10 acres uncovered at any one time, as specified in 40 C.F.R 40, Section 61.252(b)(2);

Denison Response:

The Mill has never used the "continuous disposal method" for tailings disposal. Therefore, the 10-acre requirement set out in 40 CFR 61.252(b)(2) is inapplicable to the Mill at this time.

f. provide proof that your activities comport with the requirements of EPA regulations found at 40 C.F.R. § 192.32(a), including the identification of pertinent documents and correspondence from the Nuclear Regulatory Commission;

Denison Response:

Congress created Title II of the Uranium Mill Tailings Radiation Control Act of 1978 ("UMTRCA") to regulate the management and disposition of uranium mill tailings and related wastes at active mill tailings sites. UMTRCA amended the Atomic Energy Act of 1954 ("AEA") by adding the definition of 11e.(2) byproduct material[4], by adding Section 83 of the AEA[5], which requires that mill tailings sites must be transferred to the United States Department of Energy (or a willing State) for long-term custody and maintenance, and by adding Sections 84[6] and 275[7] of the AEA, which give NRC broad authority to regulate the radiological and non-radiological aspects of mill tailings sites, in accordance with general standards promulgated by EPA and specific regulatory requirements established by NRC.

In 1980, NRC promulgated its 10 CFR Part 40, Appendix A Criteria[8], based upon the findings in its Final Generic Environmental Impact Statement On Uranium Milling set forth in NUREG-0706.[9]

In 1983, EPA issued its general standards for active uranium mill sites at 40 CFR 192.32(a).[10] In 1985, NRC amended its earlier 1980 Criteria to conform them to EPA's generally applicable standards, [11] although many of the Appendix A Criteria remained unchanged.

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[4] *See* 42 U.S.C. 2014.
[5] *See* 42 U.S.C. 2113.
[6] *See* 42 U.S.C. 2114.
[7] *See* 42 U.S.C. 2022.
[8] 45 Fed. Reg. 65,521 (1980).
[9] NUREG-0706, Final Generic Environmental Impact Statement on Uranium Milling, (September, 1980).

NRC determined that the Mill was operating in compliance with the requirements of 10 CFR Part 40, Appendix A, and hence in compliance with the standards established in 40 CFR 192.32(a) (as implemented by NRC), by virtue of renewing the Mill's Source Material License in 1997. A copy of the Mill's Source Material License is enclosed with this letter.

The State of Utah became an Agreement State for the regulation of uranium mills under Section 274 of the AEA in August of 2004. Section 274(d) of the AEA provides that NRC shall only enter into an Agreement with a State under Section 274, if among other things NRC finds that the State program is in accordance with the requirements of subsection 274(o) of the AEA. Subsection 274(o) provides that in licensing uranium mill's the State shall require "compliance with standards which shall be adopted by the State for the protection of the public health, safety, and the environment from hazards associated with such material which are equivalent, to the extent practicable, or more stringent than, standards adopted and enforced by the Commission for the same purpose, *including requirements and standards promulgated by the Commission and the Administrator of the Environmental Protection Agency pursuant to sections 83, 84, and 275,*" [emphasis added].

Accordingly, upon granting the State of Utah Agreement State status for uranium mills in August 2004, NRC determined that the State of Utah's regulatory program contained standards equivalent to or more stringent than the standards established by NRC (implementing standards set by EPA under 40 CFR 192.32).

Upon the State of Utah becoming an Agreement State for uranium mills in 2004, the Mill's Source Material License was replaced by the Mill's Radioactive Materials License and the Mill's Ground Water Discharge Permit, copies of which are enclosed with this letter. The Mill's Radioactive Materials License was up for renewal in February 2007, and is in the process of timely renewal. The Ground Water Discharge Permit is up for renewal in March 2010. The Mill's Radioactive Materials License and Ground Water Discharge Permit authorize all Mill activities, including the disposal of tailings in the operating tailings impoundments and the use of Cell 1 as an evaporation pond.

Ongoing compliance with the standards set by NRC (implementing EPA's standards in 40 CFR 192.32) is therefore determined by UDEQ through its administration of the Mill's Radioactive Materials License and Ground Water Discharge Permit and through the administration of the NESHAPS Program at the Mill. The State's continued authorization of Mill activities in accordance with its Radioactive Materials License and Ground Water Discharge Permit is therefore proof that the Mill's activities comport with the requirements of EPA regulations found at 40 CFR 192.32(a), as implemented by NRC.

However, even though compliance with the standards set out in 40 CFR 192.32(a), as implemented by NRC, are determined by UDEQ, the following discussion will address the various requirements of 40 CFR 192.32(a):

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[10] 48 Fed. Reg. 45,926 (1983) (codified at 40 CFR 192.30-.43).
[11] 50 Fed. Reg. 41,852 (1985).

(a)(1) Surface impoundments (except for an existing portion) subject to this subpart must be designed, constructed, and installed in such manner as to conform to the requirements of §264.221 of this chapter, except that at sites where the annual precipitation falling on the impoundment and any drainage area contributing surface runoff to the impoundment is less than the annual evaporation from the impoundment, the requirements of §264.228(a)(2)(iii)(E) referenced in §264.221 do not apply.

Cells 2 and 3 were constructed prior to January 1, 1983, the date of promulgation of 40 CFR 192.32. Cell 1 is an evaporation pond and is not a tailings impoundment, and in any event was constructed prior to January 1, 1983. Nevertheless, Cells 1, 2 and 3 each comply with the requirements of 40 CFR 264.221(a). The major design elements for Cells 1, 2 and 3 are set out in the responses to question 3.c. above, and demonstrate that:

- each Cell has a liner that was designed, constructed, and installed to prevent any migration of wastes out of the impoundment or pond to the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the impoundment or pond, as required by 40 CFR 264.221(a);
- the PVC liner was constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility, as required by 40 CFR 264.221(a);
- the PVC liner was constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation, as required by 40 CFR 264.221(b), and all as determined by NRC in its review and approval of the construction of the cells;
- each Cell has a liner that was placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift, as required by 40 CFR 264.221(a)(2); and
- each Cell has a liner that was installed to cover all surrounding earth likely to be in contact with the waste or leachate, as required by 40 CFR 264.221(a)(3).

The foregoing standards set out in 40 CFR 264.221(a) were incorporated, almost word for word, by NRC in Criteria 5A(1) and 5A(2) of 10 CFR Part 40, Appendix A.

Cell 4A was constructed after January 1, 1983, and relined in 2007/2008. The original construction complied with the requirements of 10 CFR Part 40, Appendix A, as determined by NRC in approving that cell for use. Because Cell 4A was originally constructed prior to January 29, 1992, the original liner design for Cell 4A did not follow all of the standards set out in 40 CFR 264.221(c). However, as the original liner construction was replaced, the discussion below relates to Cell 4A in its current form, which was approved by the Executive Secretary and which complies with all of the standards set out in 40 CFR 264.221 as well as the standards set out in 10 CFR Part 40, Appendix A. The major design elements for Cell 4A are set out in the responses to question 3.c. above, and demonstrate that:

- Cell 4A has two or more liners and a leachate collection and removal system between such liners, as required by 40 CFR 264.221(c);
- The top liner is 60 ml HDPE and has been designed and constructed of materials to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period, as required by 40 CFR 264.221(c)(1)(i)(A);
- Cell 4A has a composite bottom liner, consisting of at least two components. The upper component is 60 ml HDPE and is designed and constructed of materials to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component is a geoclay liner that is designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur, as required by 40 CFR 264.221(c)(1)(i)(B);
- The liners comply with the criteria discussed above for Cells 1, 2 and 3, as required by 40 CFR 264.221(c)(1)(ii);
- The leachate collection and removal system between the liners and immediately above the bottom composite liner is also a leak detection system. This leak detection system is capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practical time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure period, as required by 40 CFR 264.221(c)(2);
- The Ground Water Discharge Permit requires that the operator shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner (see Parts I.D.6(a) and (b) of the Ground Water Discharge Permit, a copy of which is enclosed with this letter), as required by 40 CFR 264.221(c)(3);
- The leak detection system is located completely above the seasonal high water table (which is located at least 40 feet below the bottom of the cells), as required by 40 CFR 264.221(c)(4); and
- The design and construction of the new liner system were approved by the Executive Secretary, as contemplated by 40 CFR 264.221(d).

Cells 2, 3 and 4A as well as Cell 1 have each been designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment and human error, as required by 40 CFR 264.221(g). Part I.D.3(c) of the Ground Water Discharge Permit prohibits placement of tailings into Cells 2, 3 and 4A above the flexible membrane liner in those cells. The Ground Water Discharge Permit and the Radioactive Materials License also set freeboard limits for solutions in all cells that take into account wind and wave action and rainfall storm events (see Parts I.D.2 and I.D.6(d) of the Ground Water Discharge Permit and condition 10.3 of the Mill's Radioactive Materials License).

The dikes of Cells 2, 3 and 4A as well as Cell 1 are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes, even without presuming that the liner system will function without leakage during the active life of the unit, as required by 40 CFR 264.221(h). In addition to the initial approval of the dikes by the NRC, the dikes are inspected every five years by the State Engineer.

The Ground Water Discharge Permit and Radioactive Materials License specify all design and operating practices that are necessary to ensure that the foregoing requirements are satisfied, as required by 40 CFR 264.221(i).

(2) Uranium byproduct materials shall be managed so as to conform to the ground water protection standard in §264.92 of this chapter, except that for the purposes of this subpart:

(i) To the list of hazardous constituents referenced in §264.93 of this chapter are added the elements molybdenum and uranium;

(ii) To the concentration limits provided in Table 1 of §264.94 of this chapter are added the radioactivity limits in Table A of this subpart;

(iii) Detection monitoring programs required under §264.98 to establish the standards required under §264.92 shall be completed within one (1) year of promulgation;

(iv) The regulatory agency may establish alternate concentration limits (to be satisfied at the point of compliance specified under §264.95) under the criteria of §264.94(b), provided that, after considering practical corrective actions, these limits are as low as reasonably achievable, and that, in any case, the standards of §264.94(a) are satisfied at all points at a greater distance than 500 meters from the edge of the disposal area and/or outside the site boundary, and

(v) The functions and responsibilities designated in Part 264 of this chapter as those of the "Regional Administrator" with respect to "facility permits" shall be carried out by the regulatory agency, except that exemptions of hazardous constituents under §264.93(b) and (c) of this chapter and alternate concentration limits established under §264.94(b) and (c) of this chapter (except as otherwise provided in §192.32(a)(2)(iv)) shall not be effective until EPA has concurred therein.

NRC determined compliance with the foregoing requirements by issuing the Mill's original Source Material License, as amended from time to time. Upon the State of Utah becoming an Agreement State, NRC determined that the State's groundwater protection regulations are equivalent or stricter than the standards set by 40 CFR 264.92, as implemented by NRC. The State enforces compliance with its groundwater protection regulations through the Mill's Ground Water Discharge Permit, a copy of which is enclosed with this letter. The Mill has not applied for any alternate concentration limits at its points of compliance.

(3)(i) Uranium mill tailings piles or impoundments that are nonoperational and subject to a license by the Nuclear Regulatory Commission or an Agreement State shall limit releases of radon-222 by emplacing a permanent radon barrier. This permanent radon barrier shall be constructed as expeditiously as practicable considering technological feasibility (including factors beyond the control of the licensee) after the pile or impoundment ceases to be operational. Such control shall be carried out in accordance with a written tailings closure plan (radon) to be incorporated by the Nuclear Regulatory Commission or Agreement State into individual site licenses.

(ii) The Nuclear Regulatory Commission or Agreement State may approve a licensee's request to extend the time for performance of milestones if, after providing an opportunity for public participation, the Nuclear Regulatory Commission or Agreement State finds that compliance with the 20 pCi/m^2-s flux standard has been demonstrated using a method approved by the NRC, in the manner required in 192.32(a)(4)(i). Only under these circumstances and during the period of the extension must compliance with the 20 pCi/m^2-s flux standard be demonstrated each year.

(iii) The Nuclear Regulatory Commission or Agreement State may extend the final compliance date for emplacement of the permanent radon barrier, or relevant milestone, based upon cost if the new date is established after a finding by the Nuclear Regulatory Commission or Agreement State, after providing an opportunity for public participation, that the licensee is making good faith efforts to emplace a permanent radon barrier; the delay is consistent with the definition of "available technology" in 192.31(m); and the delay will not result in radon releases that are determined to result in significant incremental risk to the public health.

(iv) The Nuclear Regulatory Commission or Agreement State may, in response to a request from a licensee, authorize by license or license amendment a portion of the site to remain accessible during the closure process to accept uranium byproduct material as defined in section 11(e)(2) of the Atomic Energy Act, 42 U.S.C. 2014(e)(2), or to accept materials similar to the physical, chemical and radiological characteristics of the in situ uranium mill tailings and associated wastes, from other sources. No such authorization may be used as a means for delaying or otherwise impeding emplacement of the permanent radon barrier over the remainder of the pile or impoundment in a manner that will achieve compliance with the 20 pCi/m^2-s flux standard, averaged over the entire pile or impoundment.

(v) the Nuclear Regulatory Commission or Agreement State may, in response to a request from a licensee, authorize by license or license amendment a portion of a pile or impoundment to remain accessible after emplacement of a permanent radon barrier to accept uranium byproduct material as defined in section 11(e)(2) of the Atomic Energy Act, 42 U.S.C. 2014(e)(2), if compliance with the 20 pCi/m^2-s flux standard of 192.32(b)(1)(ii) is demonstrated by the licensee's monitoring conducted in a manner consistent with 192.32(a)(4)(i). Such authorization may be provided only if the Nuclear Regulatory Commission or Agreement State makes a finding, constituting final agency action and after providing an opportunity for public participation, that the site will continue to achieve the 20 pCi/m^2-s flux standard when averaged over the entire impoundment.

Tailings Cell 2 is the only non-operational tailings impoundment at the Mill. It began the first phase of final closure in 2008 with the extension of interim cover over all of its surface area. Tailings had not been deposited into Cell 2 for several years prior to 2008. However, a small area of the Cell remained open to receive Mill site trash and other wastes, as permitted by condition 10.4 of the Mill's Radioactive Materials License. That small area was closed and covered with interim fill in 2008.

Since 1992, however, annual NESHAPs monitoring of Cell 2 has taken place, which has indicated that, with a few exceptions, the Cell has been in compliance with the 20 pCi/m^2-s radon-222 emission standard when averaged over the entire impoundment. The NESHAPs Report for 2008, a copy of which is enclosed with this letter, indicates that the interim cover on Cell 2 is sufficient to maintain radon-222 emissions to below the 20 pCi/m^2-s standard.

Final cover will be placed on Cell 2 in accordance with the Mill's Reclamation Plan, once the tailings have been dewatered and settled. A copy of the Mill's Reclamation Plan is enclosed with this letter. It is expected to take several years before the final cover can be placed on the Cell. In the meantime, the interim cover will ensure that the radon emission standard is satisfied.

(4)(i) Upon emplacement of the permanent radon barrier pursuant to 40 CFR 192.32(a)(3), the licensee shall conduct appropriate monitoring and analysis of the radon-222 releases to demonstrate that the design of the permanent radon barrier is effective in limiting releases of radon-222 to a level not exceeding 20 pCi/m^2-s as required by 40 CFR 192.32(b)(1)(ii). this monitoring shall be conducted using the procedures described in 40 CFR part 61, Appendix B, Method 115, or any other measurement method proposed by a licensee that the Nuclear Regulatory Commission or Agreement State approves as being at least as effective as EPA Method 115 in demonstrating the effectiveness of the permanent radon barrier in achieving compliance with the 20 pCi/m^2-s flux standard.

The 20 pCi/m^2-s radon-222 standard is being satisfied with the interim cover alone. There is no question that the final cover, which will include the addition of several additional feet of cover, will also comply with that standard. All testing has been and will continue to be performed by the 40 CFR Part 61, Appendix B, Method 115.

(4)(ii)When phased emplacement of the permanent radon barrier is included in the applicable tailings closure plan (radon), then radon flux monitoring required under §192.32(a)(4)(i) shall be conducted, however the licensee shall be allowed to conduct such monitoring for each portion of the pile or impoundment on which the radon barrier has been emplaced by conducting flux monitoring on the closed portion.

Radon flux monitoring is performed on Cells 2 and 3 annually in accordance with 40 CFR Part 61, Appendix B, Method 115 and 192.32(a)(4)(ii).

(5) Uranium byproduct materials shall be managed so as to conform to the provisions of:

(i) Part 190 of this chapter, "Environmental Radiation Protection Standards for Nuclear Power Operations"

40 CFR 190.10(a) provides that operations from facilities such as the Mill shall be conducted in such a manner as to provide reasonable assurance that: "The annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as the result of planned discharges of radioactive materials, radon and its daughters excepted, to the general environment from uranium fuel cycle operations and to radiation from these operations."

The Mill has demonstrated compliance with this requirement originally using NRC's MILDOS code for estimating environmental radiation doses for uranium recovery operations (Strenge and Bender 1981) and later by use of the updated MILDOS AREA code (Argonne 1998). This analysis was most recently performed using the MILDOS AREA code in 2007 and submitted to UDEQ in support of the Mill's 2007 Radioactive Materials License Renewal Application. A copy of that MILDOS AREA analysis is enclosed with this letter.

The analysis under both the MILDOS and MILDOS AREA codes assumed the Mill to be processing high grade Arizona Strip ores at full capacity (which has yet to be achieved in practice over an entire year), and calculated the concentrations of radioactive effluents at individual receptor locations around the Mill, including at the location of the member of the public most likely to receive the highest dose from Mill operations. The modeling indicated that even with these very conservative assumptions the dose to any member of the public did not come close to exceeding the standards set out in 40 CFR 190.10(a).

(ii) Part 440 of this chapter, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory."

The Mill is designed not to discharge any pollutants to ground water. The Mill's Ground Water Discharge Permit is intended to protect against any potential discharges to ground water. The Mill is also designed not to discharge any process wastewater to navigable waters. There are no navigable waters in the vicinity of the Mill that could be impacted by Mill operations.

(6) The regulatory agency, in conformity with Federal Radiation protection Guidance (FR, May 18, 1960, pgs. 4402-4403), shall make every effort to maintain radiation doses from radon emissions from surface impoundments of uranium byproduct materials as far below the Federal Radiation Protection Guides as is practicable at each licensed site.

The Mill is required by NRC Regulatory Guide 8.31 and Utah Administrative Code R313-15-101(2) to employ the As Low As is Reasonably Achievable ("ALARA") concept to all Mill operations in order to maintain doses from radiation to Mill workers and members of the public as low as reasonably achievable. This includes maintaining radiation doses from radon emissions from surface impoundments of uranium byproduct materials as far below the Federal Radiation Protection Guides as is practicable.

The Mill's success in its efforts to keep radon emissions from its tailings impoundments as low as reasonably achievable is evidenced by its recent NESHAPs results for 2008, which indicate that the average radon-222 flux for Cells 2 and 3 were 3.9 and 3.1 pCi/m^2-s, respectively, well below the 20 pCi/m^2-s standard.

g. *Provide a copy of all construction and modification applications required by 40 C.F.R. §61.07, a copy of all notifications of startup pursuant to §61.09, and a copy of any approvals issued pursuant to §61.08 or any state authority, including the identification of the persons or entities by whom these approvals were issued (state or federal officials).*

Denison Response:

The Approval Order (DAQE-AN0112050008-08) issued by the State of Utah pertaining to air emissions at the Mill is enclosed with this letter. Also, enclosed is a notice pursuant to Condition 9 of that Order which pertains to the requirements of 40 CFR 61.09. Due to changes in operatorship of the Mill over the years and other factors, Denison has not been able to locate all potentially relevant files at this time. Denison will continue to search for files and will provide copies of any other construction and modification applications and notifications under 40 CFR 61.08 or 61.09 that it is able to locate.

h. *provide copies of any permits that have been applied for and/or received under the Clean Air Act;*

Denison Response:

The Approval Order (DAQE-AN0112050008-08) issued by the State of Utah pertaining to air emissions at the Mill is enclosed with this letter.

i. *provide copies of any licenses or license applications for construction or operation issued by or filed with the NRC;*

Denison Response:

A copy of the Mill's Source Material License issued by the NRC is enclosed with this letter. As discussed in the response to question 4.f. above, the Source Material license was replaced by State of Utah Radioactive Materials License UT 1900479 and State of Utah Ground Water Discharge Permit No. UGW370004, copies of which are enclosed with this letter.

j. *provide copies of any licenses issued by states under state authority;*

Denison Response:

State of Utah Radioactive Materials License UT 1900479 and State of Utah Ground Water Discharge Permit No. UGW370004 are enclosed with this letter. Also enclosed with this letter is a copy of the Mill's air Approval Order (DAQE – AN0112050008-08).

k. *provide current license status, including an indication whether and when any license modifications are planned or have been agreed to;*

Denison Response:

Radioactive Materials License

The Mills State of Utah Radioactive Materials License is currently active. A license renewal application (and Environmental Report supporting the license renewal application) was submitted to UDEQ on February 28, 2007. The application is under "timely renewal" and, while the renewed License may include modifications, no agreements have been made nor has a specific time for renewal been specified. Specific modification of the License to accommodate different activities or modifications to the facility were not requested as an element of the renewal application.

Subsequent to the license renewal application, Denison has made two requests to UDEQ for amendments to the Mill's Radioactive Materials License:

- Radioactive Materials License conditions 10.4 and 10.5 currently authorize the Mill to dispose of site-generated non-tailings waste ("Mill Waste") into a designated area of Cell 2 and 11e.(2) byproduct material from in situ leach uranium recovery facilities ("Byproduct Material") into Cell 3, respectively. The designated area for disposal of Mill Waste in Cell 2 has now reached capacity and Cell 2 is no longer operational. Similarly, the remaining disposal area for Byproduct Material in Cell 3 is limited. By a letter dated October 30, 2008, Denison requested an amendment to its Radioactive Materials License that would authorize disposal of Byproduct Material and Mill Waste into other tailings cells at the site. This request is currently under consideration by UDEQ.
- By a letter dated December 11, 2008, Denison applied for an amendment to the Mill's Radioactive Materials License, and ancillary amendments to the Mill's Ground Water Discharge Permit, relating to the manner of calculating freeboard limits for Cells 3 and 4A. This request is currently under discussion between UDEQ and Denison.

<u>Ground Water Discharge Permit</u>

The Mill's Ground Water Discharge Permit is up for renewal on March 8, 2010. In order for the permit to be in timely renewal, a permit renewal application must be submitted by Denison at least 180 days before that date.

Two other Ground Water Discharge Permit modification actions are outstanding or pending at this time:

- As mentioned above, by a letter dated December 11, 2008, Denison applied for an amendment to the Mill's Radioactive Materials License, and ancillary amendments to the Mill's Ground Water Discharge Permit, relating to the manner of calculating freeboard limits for Cells 3 and 4A. This request is currently under discussion between UDEQ and Denison.
- UDEQ is in the process of preparing an amended version of the Ground Water Discharge Permit that will, among other things, amend the Ground Water Compliance Limits ("GWCLs") in the permit. The GWCLs were originally set in the permit as fractions of the State Ground Water Quality Standards ("GWQSs"), but the intention was to amend these interim GWCLs to take into account natural background ground water quality at the site, once Background Ground Water Quality Reports for the site had been prepared by Denison and approved by the Executive Secretary. Background Ground Water Quality Reports have in fact been prepared by Denison and approved by the Executive Secretary, and the interim GWCLs in the permit are now being modified to take the background conditions at the site into account. At the same time, the Executive Secretary is making a number of other modifications to the permit, most of which are of an administrative nature. The draft modified permit is currently under discussion between Denison and

UDEQ. Once the modifications have been set, UDEQ will publish the proposed modified version of the permit for public comment in accordance with applicable Utah rules. Denison expects that the draft modified permit will be published for comment within the next few weeks.

l. indicate whether all facilities and ponds/impoundments were constructed and are being operated in accordance with all permits and federal regulations.

Denison Response:

All facilities and ponds/impoundments have been constructed in accordance with all permits and federal regulations. By virtue of renewing the Mill's Source Material License in 1997, NRC has acknowledged that all Mill facilities have been constructed and are being operated in accordance with all permits and federal regulations.

NRC and, since August 2004, DRC have inspected the Mill regularly to confirm that the Mill is operating in accordance with all permits and applicable regulations. In addition, the State of Utah Division of Air Quality performs periodic inspections to confirm that the Mill is operating in compliance with its air Approval Order.

m. provide a description of any pollution control methods utilized by you;

Denison Response:

Groundwater

The Mill's Ground Water Discharge Permit, a copy of which is enclosed with this letter, details the methods utilized by the Mill to control any potential pollution to ground water. In addition, the manner of construction and operation of the Mill's tailings cells and evaporation pond described in the response to question 4.f. above serve as effective methods of control of potential pollution.

Air Approval Order

The pollution control methods utilized by the Mill for air emissions from facility operations, including pollution control equipment, are detailed in the Mill's Air Approval Order, a copy of which is enclosed with this letter.

Tailings Impoundments

As stated in the response to question 4.c., the Mill utilizes local soil as interim cover for tailings sands that are exposed above the pond solution level. These soils are low in activity (background levels) and are deposited uniformly over the area of concern in order to reduce radon emanation at tailings "beach" areas. In addition, the solutions in the impoundments serve as a cover for the tailings beneath the water's surface, thus virtually eliminating the release of radon to the atmosphere from ponded areas of the cells. Annual testing in accordance with 40

CFR 61, Subpart W has demonstrated the success of these operational pollution control mechanisms in maintaining radon emanations from the existing impoundments below the 20 pCi/m^2-s standard.

Other

The Mill monitors air particulate at several environmental monitoring stations. It also monitors soil and vegetation and surface water in the vicinity of the Mill to ensure that air particulate is not impacting the environment.

n. *State whether each of your uranium mills and uranium in-situ leaching facilities is subject to the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Radon Emissions from Operating Mill tailings as defined under 40 C.F.R. § § 61.250 et. seq. If not, explain why not.*

Denison Response:

The Mill is subject to the requirements of 40 CFR 61.250 et. seq.

5. *Submit complete results of all air and radon emission tests, emissions characterizations, or emissions studies, conducted or attempted at each facility since January 1, 1980. Indicate whether these tests were conducted as specified in 40 C.F.R. § § 61.253 and 61.255. Include with this information relevant operation parameters measured and all data recorded during these tests or studies, including the water level and moisture content, as well as how it was determined that the 'long term radon flux from the pile' was represented during time of measurement, pursuant to 40 C.F.R. 61, Appendix B, Method 115, 2.2.1.*

Denison Response:

Annual Radon Emission Tests Relating to Tailings Cells

The annual tests conducted in accordance with 40 CFR 61.253 and 61.255, as set out in the enclosed annual NESHAPs Reports, show the annual testing for radon emanations from the Mill's tailings cells. All relevant operating parameters measured and data recorded during these tests are included within the reports. As water level elevation in the pond and moisture content of the tailings at the time of the test were not required parameters, that data was not collected at the time of testing and is therefore unavailable. All measurements were reported to be in compliance with 40 CFR 61, Appendix B, Method 115 parameters and, accordingly are representative of the 'long term radon flux from the pile'.

The relative areas of pond, beach and interim cover within each cell at the time of sampling were used to determine the flux rate at that time. These conditions at the time of sampling were assumed to be representative of the average areas over the year. During periods when the Mill is inactive, there are no significant changes in these areas within each cell. During periods of operation, there can be some changes in these areas over the year, depending on the tonnages processed during the year. However, as tailings are deposited into the Cells, beach areas are covered with interim cover as soon as practicable (which generally means as soon as it is safe to use heavy equipment to cover them). As a result, the exposed beach areas are typically a fairly constant percentage of the total cell area throughout the year, even in periods of operation. Since the exposed beach areas are the largest contributor to the average radon flux from the cell, the beach area at the time of sampling will generally be representative of the beach area throughout the year, and, as a result, the annual measurements will generally be representative of the long term radon flux from the cell.

Other Emission Tests

The Mill has performed MILDOS and MILDOS AREA modeling relating to the Mill. These models predicted dose rates based on predicted emissions from the Mill facility. That modeling was performed at various times throughout the Mill's history, with the most recent being completed in February 2007 in connection with the Mill's 2007 Radioactive Materials License renewal application. A copy of that modeling report is enclosed with this letter.

6. Provide copies of all monthly and annual compliance reports prepared and submitted to EPA, as specified in 40 C.F.R. § 61.254, or similar reports submitted to all other regulatory agencies since 1980. To the extent, that you have not submitted any such report(s) provide the reasons for not having done so, and reasons, if any, you claim as a basis for not submitting such reports.

Denison Response:

All annual compliance reports (i.e., annual NESHAPs Reports) submitted in accordance with 40 CFR 61.254 have been included in the response to Question 4.d.

If you have any questions or require any further information, please contact the undersigned.

Yours truly,

Denison Mines (USA) Corp.

By:

David C. Frydenlund
Vice President, Regulatory Affairs and Counsel

cc: Andrew M. Gaydosh, EPA Region 8
Harold R. Roberts
Steven D. Landau
Ron F. Hochstein

Certification:

I certify under penalty of law that I have examined and am familiar with the information in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are, to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to section 113(c)(2) of the Act and 18 U.S.C. §§ 1001 and 1341.

David C. Frydenlund, Vice President, Regulatory Affairs and Counsel

EPA-4740

Susan Stahle/DC/USEPA/US

11/02/2011 04:08 PM

To

cc

bcc

Subject Subpart W follow-up - options for satisfying section 112(q)(1) review requirement

Meeting

Date 11/07/2011
Time 09:30:00 AM to 10:00:00 AM
Chair Susan Stahle
Invitees
Required Wendy Blake
Optional
FYI
Location Wendy's office

Hi -

As a follow-up to our last conversation, I'd like to talk about the options you asked me to put together for how EPA can satisfy its section 112(q)(1) review requirement. This is in preparation for discussing these issues generally with Patricia and the front office (if needed). All of this is in preparation for the language we will include in the subpart W preamble that describes these issues.

This first paper provides the options - this is a new paper that you have not seen.

Subpart W Review - satisfying section 112(q)(1) review requirement.docx

This second paper explains how we could satisfy Option 4 (the client's preferred option) - we discussed this paper last time we talked.

Subpart W Review - complying with subsection (d).docx

Subpart W Review Under Section 112(q)(1)
Options for Satisfying Review/Revision Requirement

Background

- Section 112(q)(1) requires that each pre-1990 NESHAP “shall be reviewed and, if appropriate, revised, to comply with the requirements of subsection (d) of this section within 10 years after the date of enactment of the Clean Air Act Amendments of 1990.”
- EPA promulgated 40 CFR Part 61, Subpart W, “National Emission Standards for Radon Emissions From Operating Mill Tailings,” on December 15, 1989.
- EPA was sued by two environmental groups in 2008 for missing this statutory deadline for reviewing/revising subpart W; EPA settled the lawsuit without committing to specific deadlines for conducting that review.
- EPA/OAR/ORIA is currently conducting the section 112(q)(1) review of subpart W and desires to propose revisions to subpart W in early 2012.

Issue: What options does EPA have for satisfying this statutory requirement?

Options

1. Review subpart W, find revisions are not appropriate, and issue that determination.

2. Review subpart W, find revisions are appropriate, and propose revisions to subpart W that keep subpart W a risk-based rule as originally promulgated under the pre-1990 CAA.

a. This does not appear to be a defensible option. The language in section 112(q)(1) specifically references section 112(d), which now requires technology-based standards instead of risk-based standards. Additionally, subpart W is not one of the source categories listed in sections 112(q)(2) or (3) that are required or allowed to set standards based on the pre-1990 version of section 112.

3. Review subpart W, find revisions are appropriate, and propose a MACT standard for subpart W sources that is in compliance with section 112(d) of the post-1990 CAA.

a. Could use of section 112(d)(4) achieve the same effect as #2 above?

4. Review subpart W, find revisions are appropriate, and propose a GACT standard for subpart W sources that is in compliance with section 112(d)(5) of the post-1990 CAA.

a. This is the option ORIA prefers.

b. Subpart W sources qualify as “area sources” under section 112(a)(2).

c. See the separate briefing paper attached for how EPA may propose a GACT standard and be in compliance with section 112(d).

5. Review subpart W, find under section 112(d)(9) that it is no longer needed, and promulgate a rule to rescind subpart W.

a. Section 112(d)(9) states that EPA is not required to promulgate standards for radionuclide emissions sources licensed by NRC if EPA determines, "by rule, and after consultation with" NRC, that NRC's regulatory program for those sources "provides an ample margin of safety to protect the public health."

b. During its review of subpart W under section 112(q)(1), EPA could find that the appropriate revision is to rescind the rule altogether because it is no longer needed, based on the criterion established in section 112(d)(9).

Key Statutory Provisions

Section 112(d) – Emissions standards

(4) Health threshold

With respect to pollutants for which a health threshold has been established, the Administrator may consider such threshold level, with an ample margin of safety, when establishing emission standards under this subsection.

(9) Sources licensed by the Nuclear Regulatory Commission

No standard for radionuclide emissions from any category or subcategory of facilities licensed by the Nuclear Regulatory Commission (or an Agreement State) is required to be promulgated under this section if the Administrator determines, by rule, and after consultation with the Nuclear Regulatory Commission, that the regulatory program established by the Nuclear Regulatory Commission pursuant to the Atomic Energy Act [42 U.S.C.A. § 2011 et seq.] for such category or subcategory provides an ample margin of safety to protect the public health.

Section 112(q) – Savings provision

(1) Standards previously promulgated

Any standard under this section in effect before the date of enactment of the Clean Air Act Amendments of 1990 [Nov. 15, 1990] shall remain in force and effect after such date unless modified as provided in this section before the date of enactment of such Amendments or under such Amendments. Except as provided in paragraph (4), any standard under this section which has been promulgated, but has not taken effect, before such date shall not be affected by such Amendments unless modified as provided in this section before such date or under such Amendments. **Each such standard shall be reviewed and, if appropriate, revised, to comply with the requirements of subsection (d) of this section within 10 years after the date of enactment of the Clean Air Act Amendments of 1990.** If a timely petition for review of any such standard under section 7607 of this title is pending on such date of enactment, the standard shall be upheld if it complies with this section as in effect before that date. If any such standard is remanded to the Administrator, the Administrator may in the Administrator's discretion apply either the requirements of this section, or those of this section as in effect before the date of enactment of the Clean Air Act Amendments of 1990.

(2) Special rule

Notwithstanding paragraph (1), no standard shall be established under this section, as amended by the Clean Air Act Amendments of 1990, for radionuclide emissions from (A) elemental phosphorous plants, (B) grate calcination elemental phosphorous plants, (C) phosphogypsum stacks, or (D) any subcategory of the foregoing. This section, as in effect prior to the date of enactment of the Clean Air Act Amendments of 1990 [November 15, 1990], shall remain in effect for radionuclide emissions from such plants and stacks.

(3) Other categories

Notwithstanding paragraph (1), this section, as in effect prior to the date of enactment of the Clean Air Act Amendments of 1990 [Nov. 15, 1990], shall remain in effect for radionuclide emissions from non-Department of Energy Federal facilities that are not licensed by the Nuclear Regulatory Commission, coal-fired utility and industrial boilers, underground uranium mines, surface uranium mines, and disposal of uranium mill tailings piles, unless the Administrator, in the Administrator's discretion, applies the requirements of this section as modified by the Clean Air Act Amendments of 1990 to such sources of radionuclides.

Subpart W Review Under Section 112(q)(1)
How Can We Comply With "Subsection (d)?"

Radionuclide NESHAP – pre-1990 CAA

1. EPA listed radionuclides as a HAP in 1979[1] under CAA sections 112 and 122.

   Section 122(a) required that EPA, "after notice and opportunity for public hearing…review all available relevant information and determine whether or not emissions of radioactive pollutants (including source material, special nuclear material, and byproduct material)…will cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health. If the Administrator makes an affirmative determination…he shall simultaneously with such determination include such substance in the list published under section…7412(b)(1)(A) of this title (in the case of a substance which, in the judgment of the Administrator, causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness)…." [Note: the ( ) contains the definition of "HAP" as contained in section 112(a) at that time.]

   Section 112(b)(1)(A) required that EPA "publish (and shall from time to time thereafter revise) a list which includes each hazardous air pollutant for which he intends to establish an emission standard under this section."

2. EPA began a series of rulemakings in 1983 for regulating sources of radionuclides under CAA section 112 which eventually resulted in a final rule package in 1989 that contained the radionuclide NESHAP.[2]

3. Subpart W[3] was one of those radionuclide NESHAP. It was promulgated on December 15, 1989, as a risk-based standard according to section 112(b)(1)(B).

   Section 112(b)(1)(B) required that "[w]ithin 180 days after the inclusion of any air pollutant in such list, the Administrator shall publish proposed regulations establishing emission standards for such pollutant together with a notice of a public hearing within thirty days. Not later than 180 days after such publication, the Administrator shall prescribe an emission standard for such pollutant, unless he finds, on the basis of information presented at such hearings, that such pollutant clearly is not a hazardous air pollutant. <u>The Administrator shall establish any such standard at the level which in his judgment provides an ample margin of safety to protect the public health from such hazardous air pollutant.</u>"

---

[1]44 Fed. Reg. 76738, December 27, 1979.
[2]54 Fed. Reg. 51654, December 15, 1989. See Section III. Historical Background of Radionuclide NESHAPs (51657-51658) for a complete explanation of these rulemakings.
[3]40 CFR Part 61, Subpart W, "National Emission Standards for Radon Emissions From Operating Mill Tailings."

The 1990 CAA Amendments – A New Section 112

4. The 1990 Clean Air Amendments (1990 CAAA) fundamentally changed how EPA regulates HAP under section 112. EPA now regulates the HAP listed in section 112(b) by listing the sources of these HAP under section 112(c) and promulgating technology-based standards under section 112(d).

5. Section 112(d) generally requires that EPA promulgate MACT standards for all sources.

   Section 112(d)(2) states in part: "emissions standards promulgated under this subsection and applicable to new or existing sources of [HAP] shall require the maximum degree of reduction in emissions of the [HAP] subject to this section (including a prohibition on such emissions, where achievable) that the Administrator, taking into consideration [certain factors]…determines is achievable…."

6. However, Section 112(d)(5) provides that "area sources" that are "listed pursuant to subsection (c) of this section" may set a GACT standard.

   Section 112(a)(2) states: "The term 'area source' means any stationary source of hazardous air pollutants that is not a major source."

   Section 112(a)(1) states: "The term 'major source' means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants. The Administrator may establish a lesser quantity, or in the case of radionuclides different criteria, for a major source than that specified in the previous sentence, on the basis of the potency of the air pollutant, persistence, potential for bioaccumulation, other characteristics of the air pollutant, or other relevant factors."

7. Section 112(q) requires that EPA revisit certain NESHAP promulgated prior to the 1990 CAAA to determine whether revisions to these NESHAP are necessary to make them compliant with section 112(d).

   Section 112(q)(1) requires that "[e]ach such standard shall be reviewed and, if appropriate, revised, to comply with the requirements of subsection (d) of this section within 10 years after the date of enactment of the Clean Air Act Amendments of 1990."

The Subpart W Review – How Can We Comply With "Subsection (d)?"

8. Under section 112(q)(1) EPA must "review, and if appropriate, revise" subpart W "to comply with the requirements of subsection (d)" contained in the post-1990 CAA.

9. Subpart W sources qualify as "area sources" under Section 112(a)(1).

   EPA has not yet established "different criteria" for defining a "major source" of radionuclides, so under the definitions in the statute, subpart W sources may be considered "area sources."

10. However, subpart W sources were not "listed" pursuant to section 112(c)(3) since that section did not exist in its current form when radionuclides were first listed (in 1979) and subpart W sources were first regulated (in 1989) – **Does this preclude EPA from promulgating a GACT standard for these sources?**

11. Yes, unless EPA "lists" subpart W sources under 112(c)(4), which would then enable EPA to promulgate a GACT standard under section 112(d)(5) for these sources.

    Section 112(c)(4) states: "The Administrator may, in the Administrator's discretion, list any category or subcategory of sources previously regulated under this section as in effect before November 15, 1990."

12. EPA could then satisfy its section 112(q)(1) obligations for subpart W by: (1) reviewing whether the current subpart W requirements are in compliance with what would be considered a GACT standard under section 112(d)(5); and/or (2) promulgating a new GACT standard under section 112(d)(5) for subpart W sources.

    - Subpart W sources are known as **uranium mills** which are specifically defined as "facilities licensed to manage uranium byproduct materials during and following the processing of uranium ores, commonly referred to as uranium mills and their associated tailings." 40 CFR 61.250.

    - Subpart W regulates the tailings "impoundments" at the uranium mills.

    - In these revisions, ORIA wishes to distinguish between and regulate two types of "impoundments" as follow:

        1. <u>Conventional mill tailings impoundments</u> – these impoundments would be subject to the **same** requirements that now exist in subpart W.
        2. <u>Evaporation and holding ponds</u> – these impoundments would be subject to a **newly proposed** GACT standard.

    - To accomplish this objective, it seems we would need to "list" uranium mills under section 112(c)(4) so that we could propose a GACT standard under section 112(d)(5).

EPA-4345

Daniel Schultheisz/DC/USEPA/US

11/07/2011 03:12 PM

To Jonathan Edwards, Alan Perrin

cc Tom Peake

bcc

Subject Mike's Request

The attached one-pager gives a brief status update for the five actions that will need OMB attention. The status statements are brief. It also shows milestone dates for the three regulatory actions, showing how dates have changed. The dates reflect the most recent "old" dates, but it should be noted that both FAR for Subpart W and options selection for Part 192 were originally to be in August. Subpart W FAR was moved to September, then November, and now December because of the need to get OGC input. The signature date for Subpart W is now only about six weeks after submittal to OMB, rather than the usual three months. Ray thinks he did that to keep the schedule from slipping too much, but we should probably extend it to three months since it is our of our hands (especially if OMB is going to limit its reviews in 2012). This would put signature in late April.

Let me know if this looks okay as a starting point and if anything else needs to be done with it.

Status on RPD Actions Nov 2011.docx

RPD Actions – Status Update
November 7, 2011

Protective Action Guides (PAGs):
Proposed PAG revisions were submitted to the Office of Management and Budget (OMB) on ______. OMB review is continuing. RPD has met with OMB staff to discuss initial comments.

Federal Guidance on Use of X-Rays (Federal Guidance Report No. 14):
Proposed FGR 14 was submitted to OMB on ______. OMB has not yet accepted the document for review.

40 CFR Part 190 (Standards for Nuclear Power Operations):
A draft Advance Notice of Proposed Rulemaking (ANPR) has been circulated to the Agency workgroup. The second workgroup meeting took place on November 3. RPD met with the Department of Energy on October 6 and will meet with the Nuclear Regulatory Commission on November 8. The Office of Policy has expressed concern regarding the timing of the ANPR and expectations of OMB action in 2012. This action has been determined to be Tier 2.

Date	Options	FAR	To OMB	Signature
Old	11/9/11	11/20/11	11/30/11	12/23/11
New	12/9/11	12/20/11	12/30/11	1/23/12

40 CFR Part 192 (Standards for Uranium and Thorium Mill Tailings):
A draft risk assessment has been circulated to the Agency workgroup and comments are being addressed. A draft economic impact analysis has been received and reviewed internally. The final report from the Science Advisory Board is expected the week of November 7. A Peer Review of the revised risk assessment will be initiated and is anticipated to be complete by the end of CY 2011. Both the SAB report and the peer review have been delayed. A meeting to update status was held with NRC on October 26.

Date	Options	FAR	To OMB	Signature
Old	11/4/11	1/15/12	2/29/12	5/4/12
New	2/1/12	4/11/12	5/30/12	8/3/12

40 CFR Part 61, Subpart W (NESHAP for Operating Uranium Mill Tailings):
Options selection was held in June and a draft preamble/rule circulated to the workgroup. OGC will provide additional language on legal aspects that can be used in similar situations. Adherence to current schedule for FAR is dependent on OGC revisions and assumes less than 90-day OMB review. Revisions to technical support documents and economic impact analysis are underway.

Date	Options	FAR	To OMB	Signature
Old	6/30/11	11/15/11	12/20/12	2/29/12
New	6/30/11	12/15/11	1/20/12	2/29/12

EPA-1221

Tom Peake/DC/USEPA/US

11/10/2011 01:48 PM

To Daniel Schultheisz

cc Lee.Raymond, Brian Littleton, Reid Rosnick, Andrea Cherepy

bcc

Subject Re: Mike's Request--changing dates

Dan,
In this document we need to move the 40 CFR 190 dates 12/20 & 12/30 several weeks into January because of the holidays. This means we need to change them in the system to January

Ray,
When you get in next week, will you change the dates for 40 CFR 190?

Also, we will need to move the Subpart W 12/15 date since Sue won't get her stuff in time. Please work with Reid to get a time that we can run by Jon for his agreement.

Then, we need to change the dates in the one-pager to reflect these changes.

Thanks.

Tom Peake
Director
Center for Waste Management and Regulations
US EPA (6608J)
1200 Pennsylvania Ave, NW
Washington, DC 20460
phone: 202-343-9765

Physical Location and for deliveries:
Room 529
1310 L St, NW
Washington, DC 20005

Daniel Schultheisz The attached one-pager gives a brief status upd... 11/07/2011 03:12:04 PM

From: Daniel Schultheisz/DC/USEPA/US
To: Jonathan Edwards/DC/USEPA/US@EPA, Alan Perrin/DC/USEPA/US@EPA
Cc: Tom Peake/DC/USEPA/US@EPA
Date: 11/07/2011 03:12 PM
Subject: Mike's Request

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Proposed FGR 14 was submitted to OMB on ______. OMB has not yet accepted the document for review.

40 CFR Part 190 (Standards for Nuclear Power Operations):
A draft Advance Notice of Proposed Rulemaking (ANPR) has been circulated to the Agency workgroup. The second workgroup meeting took place on November 3. RPD met with the Department of Energy on October 6 and will meet with the Nuclear Regulatory Commission on November 8. The Office of Policy has expressed concern regarding the timing of the ANPR and expectations of OMB action in 2012. This action has been determined to be Tier 2.

Date	Options	FAR	To OMB	Signature
Old	11/9/11	11/20/11	11/30/11	12/23/11
New	12/9/11	12/20/11	12/30/11	1/23/12

40 CFR Part 192 (Standards for Uranium and Thorium Mill Tailings):
A draft risk assessment has been circulated to the Agency workgroup and comments are being addressed. A draft economic impact analysis has been received and reviewed internally. The final report from the Science Advisory Board is expected the week of November 7. A Peer Review of the revised risk assessment will be initiated and is anticipated to be complete by the end of CY 2011. Both the SAB report and the peer review have been delayed. A meeting to update status was held with NRC on October 26.

Date	Options	FAR	To OMB	Signature
Old	11/4/11	1/15/12	2/29/12	5/4/12
New	2/1/12	4/11/12	5/30/12	8/3/12

40 CFR Part 61, Subpart W (NESHAP for Operating Uranium Mill Tailings):
Options selection was held in June and a draft preamble/rule circulated to the workgroup. OGC will provide additional language on legal aspects that can be used in similar situations. Adherence to current schedule for FAR is dependent on OGC revisions and assumes less than 90-day OMB review. Revisions to technical support documents and economic impact analysis are underway.

Date	Options	FAR	To OMB	Signature
Old	6/30/11	11/15/11	12/20/12	2/29/12
New	6/30/11	12/15/11	1/20/12	2/29/12

EPA-2870

Reid Rosnick/DC/USEPA/US
11/10/2011 01:56 PM

To Carmen Romero
cc
bcc
Subject Document for posting on Subpart W public web site

Subpart W Risk Document.pdf

http://www.epa.gov/radiation/neshaps/subpartw/rulemaking-activity.html

I'll stop by after 2...

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Risk Assessment Revision for 40 CFR Part 61 Subpart W – Radon Emissions from Operating Mill Tailings

Task 4 – Detailed Risk Estimates

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under

Contract Number EP-D-10-042
Work Assignment No. 1-06, Task 5

Prepared for:

U.S. Environmental Protection Agency
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Brian Littleton
Work Assignment Manager

November 10, 2011

In accordance with the *Quality Assurance Project Plan: Risk Assessment Revision for 40 CFR Part 61 Subpart W – Radon Emissions from Operating Mill Tailings*, this document has been reviewed and approved by the following individuals:

Work Assignment Task Manager:	____________________ Stephen F. Marschke	Date: __________
Work Assignment Task Manager:	____________________ Abe Zeitoun	Date: __________
Corporate Quality Assurance Manager/Work Assignment Quality Assurance Manager:	____________________ Stephen L. Ostrow	Date: __________

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ACRONYMS AND ABBREVIATIONS

CBR	Crow Butte Resources, Inc.
CFR	Code of Federal Regulations
Ci	Curie
CCD	Counter-Current Decantation
CofA	Court of Appeals
CPP	Central Processing Plant
Dir	Direction
E	East
EA	Environmental Assessment
ENE	East Northeast
ESE	East Southeast
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FGR	Federal Guidance Report
HRI	Hydro Resources, Inc.
HUP	Highland Uranium Project
ICRP	International Commission on Radiological Protection
ISL	in-situ leach
km	kilometer
KUC	Kennecott Uranium Company
LCF	Latent Cancer Fatalities
lbs	pounds
m	meter
N	North
NE	North East
NNE	North Northeast
NNW	North Northwest
NW	North West
NESAPS	National Emission Standards for Hazardous Air Pollutants
NMELC	New Mexico Environmental Law Center
NNW	North Northwest
NRC	Nuclear Regulatory Commission
NUREG	NUclear REGulatory report
NW	North West
NWS	National Weather Service
ORIA	Office of Radiation and Indoor Air
ORNL	Oak Ridge National Laboratory
Pb-210	Lead-210
ppm	parts per million
Ra-226	Radium-226
RAI	Request of Additional Information
RMEI	Reasonably Maximally Exposed Individual

ACRONYMS AND ABBREVIATIONS (Continued)

Rn-222	Radon-222
R&D	Research and Development
s	second
S	South
SAG	semi-autogenous grinding
SE	South East
SR	Smith Ranch
SR-HUP	Smith Ranch-Highland Uranium Project
SSE	South Southeast
sq	square
SSW	South Southwest
SW	Southwest
SX	Solvent Extraction
TCEQ	Texas Commission on Environmental Quality
TDH	Texas Department of Health
TDSHS	Texas Department of State Health Services
TEDE	Total Effective Dose Equivalent
TNRCC	Texas Natural Resource Conservation Commission
TRRC	Texas Railroad Commission
U-238	Uranium-238
U_3O_8	Triuranium octoxide (yellow cake)
URI	Uranium Resources, Inc.
V_2O_5	vanadium pentoxide
W	West
WNW	West Northwest
WSW	West Southwest
yr	year

EXECUTIVE SUMMARY

The Office of Radiation and Indoor Air (ORIA) promulgated National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for radon emissions from operating uranium mill tailings impoundments (Subpart W) on December 15, 1989 (FR 1989). In support of Subpart W, as well as other portions of radiolonuclide NESHAPs, ORIA published a three volume Environmental Impact Statement (EIS) that provided: 1) a detailed description of the Agency's procedures and methods for estimating radiation dose and risk due to radionuclide emissions to the air (EPA 1989a), 2) detailed risk estimates for each source of emissions (EPA 1989b, EPA 1989c), and 3) detailed economic assessments for each source of emissions (EPA 1989d).

The purpose of this Work Assignment is to revise the risk assessment for the NESHAPs for radionuclides from uranium facilities. The information developed in this Work Assignment will be used by the Environmental Protection Agency (EPA or the Agency) in the determination of whether the existing standards for Subpart W need revising, and, if so, what may represent reasonable revisions to the standard.

The uranium facilities that were analyzed are listed in Table ES-1 and include three existing conventional mines/mills, five in-situ leach mines, and two generic sites assumed to be the location of conventional mines/mills.

Table ES-1: Uranium Sites Analyzed

Mill / Mine	Type	State	Regulator	Latitude			Longitude		
				deg	min	sec	deg	min	sec
Cañon City Mill	Conventional	CO	State	38	23	46	-105	13	45
Crow Butte	In-Situ Leach	NE	NRC	42	38	41	-103	21	8
Western Generic	Conventional	NM	NRC	35	31	37	-107	52	52
Alta Mesa 1, 2, 3	In-Situ Leach	TX	State	26	53	59	-98	18	29
Kingsville Dome 1,3	In-Situ Leach	TX	State	27	24	54	-97	46	51
White Mesa Mill	Conventional	UT	State	37	34	26	-109	28	40
Eastern Generic	Conventional	VA	NRC	38	36	0	-78	1	11
Smith Ranch - Highland	In-Situ Leach	WY	NRC	43	3	12	-105	41	8
Christensen / Irigaray	In-Situ Leach	WY	NRC	43	48	15	-106	2	7
Sweetwater Mill	Conventional	WY	NRC	42	3	7	-107	54	41

In Task 3 of this Work Assignment, an evaluation of existing computer models that could be used to perform this dose/risk assessment was performed. As a result of that evaluation, it was determined to use the CAP88 computer program, which is based on the AIRDOS and RADRISK computer programs (Trinity 2007) that were used in the original 1989 Subpart W evaluation (EPA 1989a). Discussion on why CAP88 was selected for this assessment can be found in SC&A 2010.

In order to perform the dose/risk analysis, three types of data were necessary: 1) the distribution of the population living within 80 kilometers of each site, 2) the meteorological data at each site, particularly the wind speed, wind direction, and stability class, and 3) the amount of radon annually released from the site.

Normally, the population doses and risks are calculated out to a distance of 80 kilometers (50 miles) from the site. Therefore, it was necessary to know the population to a distance of 80 kilometers from each site in each of the 16 compass directions. This information is not normally available from U.S. Census Bureau data. However, in 1973, the EPA wrote a computer program, SECPOP (Sandia 2003), which would convert census block data into the desired 80-kilometer population estimates for any specific latitude and longitude within the continental United States. The Nuclear Regulatory Commission (NRC) adopted this program to perform citing reviews for license applications, and has updated the program to use the 2000 census data. The SECPOP program was used to estimate the population distribution around each site; that population was then modified to account for changes in the population from 2000 to 2010.

For those sites where site-specific meteorological data were identified, those site-specific data were used. For other sites, CAP88 is provided with a weather library of meteorological data from over 350 National Weather Service (NWS) stations. For sites without site-specific meteorological data, data from the NWS station nearest the site were used.

Annual radon release estimates were determined for each site based on the available documentation for the site. For example, some sites reported their estimated radon release in their semi-annual release reports, while other sites calculated their radon release as part of their license application or renewal application. Finally, for some sites, the annual radon release estimates were obtained from the NRC-produced site-specific Environmental Assessment. If multiple documents provided radon release estimates for a particular site, the estimate from the most recent document was used. Likewise, if both theoretical and actual radon release values were identified for a site, the actual radon release value was given preference.

Table ES-2 presents the reasonably maximally exposed individual (RMEI) and population doses and risks due to the maximum radon releases estimated for each uranium site. The maximum radon releases were used to calculate the doses in order to be able to compare the results to regulatory criteria. For example, 10CFR § 20.1301 "Dose limits for individual members of the public" restricts the total effective dose equivalent (TEDE) to individual members of the public from the licensed operation to less than 100 mrem per year. 10CFR § 20.1301 (e) additionally stipulates a licensee must also comply with the, "provisions of EPA's generally applicable environmental radiation standards in 40 CFR part 190 shall comply with those standards." However, discharges of radon and its daughters are specifically excepted from compliance with the dose criteria of 40 CFR § 190.10(a).

Table ES-2: Calculated Maximum Total Annual RMEI, Population Dose and Risk

Uranium Site	Maximum Radon Release (Ci/yr)	Annual Dose		LCF[(a)] Risk (yr^{-1})	
		Population (person-rem)	RMEI (mrem)	Population	RMEI
Sweetwater	2,075	0.5	1.2	2.9E-06	6.0E-07
White Mesa	1,750	5.2	12.0	3.4E-05	6.4E-06
Cañon City	269	49.2	10.3	3.1E-04	5.4E-06
Smith Ranch - Highlands	36,500	3.7	1.5	2.3E-05	7.7E-07
Crow Butte	8,885	2.7	3.3	1.7E-05	1.7E-06
Christensen / Irigaray	1,600	3.8	1.9	2.4E-05	9.9E-07
Alta Mesa	740	21.6	11.5	1.3E-04	6.1E-06
Kingsville Dome	6,958	58.0	11.3	3.8E-04	6.1E-06
Eastern Generic	1,750	200.3	28.2	1.4E-03	1.6E-05
Western Generic	1,750	5.1	6.0	2.7E-04	7.7E-06

[(a)]Latent Cancer Fatalities

Table ES-3 presents the RMEI and population doses and risks due to the average radon releases estimated for each uranium site. The risks were based on average radon releases in order to make it easier to convert these annual risk values into lifetime risk values, by simply multiplying the Table ES-3 values by the number of years that the facility operates for the population risk or by the length of time that the individual lives next to the facility for the RMEI risk.

Table ES-3: Calculated Average Total Annual RMEI, Population Dose and Risk

Uranium Site	Average Radon Release (Ci/yr)	Annual Dose		LCF[(a)] Risk (yr^{-1})	
		Population (person-mrem)	RMEI (rem)	Population	RMEI
Sweetwater	1,204	0.3	0.7	1.7E-06	3.5E-07
White Mesa	1,388	3.0	7.0	2.0E-05	3.7E-06
Cañon City	146	28.6	6.0	1.8E-04	3.1E-06
Smith Ranch - Highlands	21,100	2.2	0.9	1.3E-05	4.5E-07
Crow Butte	4,467	1.6	1.9	1.0E-05	1.0E-06
Christensen / Irigaray	1,040	2.2	1.1	1.4E-05	5.7E-07
Alta Mesa	472	12.5	6.7	7.6E-05	3.6E-06
Kingsville Dome	1,291	33.6	6.6	2.2E-04	3.5E-06
Eastern Generic	1,388	116.3	16.4	7.9E-04	9.2E-06
Western Generic	1,388	3.0	3.5	1.6E-04	4.4E-06

[(a)]Latent Cancer Fatalities

1.0 INTRODUCTION AND BACKGROUND

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) includes radon emissions for uranium mill tailings (40 CFR Part 61 Subpart W – National Emission Standards for Radon Emissions from Operating Mill Tailings – December 15, 1989). At the time of the standard's promulgation, the overwhelming numbers of uranium processing facilities were conventional acid or alkaline leach mills. Radon emissions from these facilities were primarily from the dried out portions of large (greater than 100-acre) tailings ponds. With the promulgation of Subpart W, this large area source was reduced by the requirements to limit the size of new tailings areas to either 40 acres for phased disposal or 10 acres for continuous disposal (40 CFR 61 Subpart W). Additionally, and more importantly, economic and other considerations have led commercial uranium recovery companies to submit license applications/ amendments to develop, upgrade or restart a significant number of in-situ leach (ISL) facilities (NRC 2009).

Table 1: Uranium Sites Analyzed

Mill / Mine	Type	State	Regulator	Latitude			Longitude		
				deg	min	sec	deg	min	sec
Cañon City Mill	Conventional	CO	State	38	23	46	-105	13	45
Crow Butte	In-Situ Leach	NE	NRC	42	38	41	-103	21	8
Churchrock	In-Situ Leach	NM	NRC	35	31	41	-108	44	33
Crownpoint	In-Situ Leach	NM	NRC	35	40	41	-108	9	4
Western Generic	Conventional	NM	NRC	35	31	37	-107	52	52
Alta Mesa 1, 2, 3	In-Situ Leach	TX	State	26	53	59	-98	18	29
Kingsville Dome 1,3	In-Situ Leach	TX	State	27	24	54	-97	46	51
Vasquez	In-Situ Leach	TX	State	31	58	6	-99	54	6
White Mesa Mill	Conventional	UT	State	37	34	26	-109	28	40
Eastern Generic	Conventional	VA	NRC	38	36	0	-78	1	11
Smith Ranch - Highland	In-Situ Leach	WY	NRC	43	3	12	-105	41	8
Christensen / Irigaray	In-Situ Leach	WY	NRC	43	48	15	-106	2	7
Sweetwater Mill	Conventional	WY	NRC	42	3	7	-107	54	41

In Section 2.0, detailed risk assessments were performed for all but three of the uranium sites listed in Table 1. The reasons for not analyzing three sites (Churchrock, Crownpoint, and Vasquez) are described below.

The Crownpoint and Churchrock uranium deposits, San Juan Basin, New Mexico, are currently being developed by Uranium Resources, Inc. (URI) and its subsidiary Hydro Resources, Inc. (HRI). Both deposits will be developed using advanced ISL mining techniques. URI/HRI currently has about 37.834 million pounds of U_3O_8 (14,583 tonnes U) of estimated recoverable reserves at Crownpoint/Churchrock. In March, 1997, a Final Environmental Impact Statement (FEIS) for the Crownpoint/Churchrock sites was completed by the NRC (NRC 1997), which recommends the issuance of an operating license. In January 1998, HRI was granted Source Material License SUA-1580 by the NRC for uranium production at the Crownpoint/Churchrock Uranium Project. Although the license was granted, the project has been delayed due to depressed uranium prices and litigation. In December 2002, the NRC found that, since the renewal application had been timely filed by HRI, the Crownpoint/Churchrock license would not expire until final action had been taken by the NRC on the SUA-1580 renewal application. Regarding the litigation, in March 2010, the United States Court of Appeals, Tenth Circuit denied the intervener's petition for review and upheld the NRC's licensing decision in all respects (CofA 2010). In September 2010, the New Mexico Environmental Law Center (NMELC) filed an appeal to the U.S. Supreme Court (Docket No. 10-368). On November 15, 2010, the United States Supreme Court denied NMELC's petition to review the Appeal Court's ruling, after which URI indicated that construction of the Crownpoint/Churchrock facilities should begin in 2012, with production in 2013. Since, to date, there have been no radon releases from the Crownpoint/Churchrock Uranium Project, it was determined that a detailed radon risk assessment for this licensed site should not be performed.

The Vasquez uranium site is an ISL mine owned by URI and located in southwestern Duval County in South Texas. For the site, URI holds the Texas Natural Resource Conservation Commission's Underground Injection Control Permit: UR03050. The site is also covered by the Texas Department of Health's radioactive materials license: L06353. The Vasquez ISL mine was commissioned in October 2004, and reached peak production output in 2005. In 2006 and 2007, production at Vasquez declined, with 78,600 pounds of uranium in 2007 and 36,600 pounds in 2008. The last well field at Vasquez was fully depleted of its economically recoverable reserves in October 2008, and the project is now undergoing restoration. Vasquez did not have a processing plant; rather the uranium loaded resin from Vasquez was delivered to the Kingsville Dome central plant for processing. Since the Vasquez ISL mine is no longer active, it was determined that a detailed radon risk assessment for this site should not be performed. (URI 2010a, URI 2010b)

1.1 Dose Calculation Methodology

As part of this Work Assignment, the various computer models that could be used to calculate the doses and risks due to the operation of conventional and ISL uranium mines were evaluated. Seven computer programs were considered to be used for this risk assessment: CAP88, RESRAD-OFFISTE, MILDOS, GENII, MEPAS, AIRDOS, and AERMOD. A detailed selection process was used to select the program from the first five programs listed. AIRDOS was not included in the detailed selection process, since it is no longer an independent program, but has been incorporated into CAP88. Because it only calculates atmospheric dispersion, but not radiological doses or risks, AERMOD was also not included in the detailed selection. Each of the five programs were given a score of between 0 and 5 for each of the 12 following criteria: 1) Exposure Pathways Modeled, 2) Population Dose/Risk Capability, 3) Dose Factors Used, 4) Risk Factors Used, 5) Meteorological Data Processing, 6) Source Term Calculations, 7) Verification and Validation, 8) Ease of Use/User Friendly, 9) Documentation, 10) Sensitivity Analysis Capability, and 12)Probabilistic Analysis Capability. Also, each criterion had a weighting factor of between 1 and 2. The total weighted score was calculated for each code, and CAP88 was selected for use in this evaluation. SC&A 2010 presents the details of this program selection process. CAP88 was developed in 1988 from the AIRDOS, RADRISK, and DARTAB computer programs, which had been developed for the EPA at the Oak Ridge National Laboratory (ORNL) (Trinity 2007).

CAP88, which stands for "Clean Air Act Assessment Package-1988," is used to demonstrate compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAPs) applicable to radionuclides. CAP88 calculates the doses and risk to the reasonably maximally exposed individual (RMEI) and as well as the surrounding population. Exposure pathways evaluated by CAP88 are: inhalation, air immersion, ingestion of vegetables, meat, and milk, and ground surface exposure. CAP88 uses a modified Gaussian plume equation to estimate the average dispersion of radionuclides released from up to six emitting sources. The sources may be either elevated stacks, such as a smokestack, or uniform area sources, such as a pile of uranium mill tailings. Plume rise can be calculated assuming either a momentum or buoyant-driven plume. Assessments are done for a circular grid of distances and directions for a radius of up to 80 kilometers (50 miles) around the facility. The Gaussian plume model produces results that agree with experimental data as well as any model, is fairly easy to work with, and is consistent with the random nature of turbulence. CAP88 incorporates dose and risk factors from Federal Guidance Report 13 (FGR 13, EPA 1999) in place of the RADRISK data that were used in previous versions. The FGR 13 factors are based on the methods in Publication 72 of the International Commission on Radiological Protection (ICRP 1972). A description of the mathematical models used by CAP88 is provided in the CAP88 Users Manual (Trinity 2007).

CAP88 requires the distribution of the population surrounding the site and the characteristics of the local meteorology. The methodology used to estimate the population distributions is described in the following section, Section 1.2, while the estimated distributions are presented in the Section 2.0 site-specific subsections. For those sites where site-specific meteorological data were identified, site-specific data were used. For other sites, CAP88 is provided with a weather library of meteorological data from over 350 National Weather Service (NWS) stations. For sites without site-specific meteorological data, the data from the NWS station nearest the site were used, as described in the Section 2.0 site-specific subsections.

Additionally, CAP88 requires much data that is radionuclide-independent and usually independent of the site being analyzed. Table 2 is a listing of the radionuclide- and site-independent parameters, along with the default values that are provided with CAP88 and that were used for these uranium site dose and risk analyses.

Table 2: Values for CAP88 Site Independent Parameters

Parameter (Units)	Value
Human Inhalation Rate	
Cubic centimeters/hr	9.17E+05
Soil Parameters	
Effective surface density (kg/sq m, dry weight) (Assumes 15 cm plow layer)	2.15E+02
Buildup Times	
For activity in soil (years)	1.00E+02
For radionuclides deposited on ground/water (days)	3.65E+02

Table 2: Values for CAP88 Site Independent Parameters

Parameter (Units)	Value
Delay Times	
Ingestion of pasture grass by animals (hr)	0.00E+00
Ingestion of stored feed by animals (hr)	2.16E+03
Ingestion of leafy vegetables by man (hr)	3.36E+02
Ingestion of produce by man (hr)	3.36E+02
Transport time from animal feed-milk-man (day)	2.00E+00
Time from slaughter to consumption (day)	2.00E+01
Weathering	
Removal rate constant for physical loss (per hr)	2.90E-03
Crop Exposure Duration	
Pasture grass (hr)	7.20E+02
Crops/leafy vegetables (hr)	1.44E+03
Agricultural Productivity	
Grass-cow-milk-man pathway (kg/sq m)	2.80E-01
Produce/leafy vegetables for human consumption (kg/sq m)	7.16E-01
Fallout Interception Fractions	
Vegetables	2.00E-01
Pasture	5.70E-01
Grazing Parameters	
Fraction of year animals graze on pasture	4.00E-01
Fraction of daily feed that is pasture grass when animal grazes on pasture	4.30E-01
Animal Feed Consumption Factors	
Contaminated feed/forage (kg/day, dry weight)	1.56E+01
Dairy Productivity	
Milk production of cow (L/day)	1.10E+01
Meat Animal Slaughter Parameters	
Muscle mass of animal at slaughter (kg)	2.00E+02
Fraction of herd slaughtered (per day)	3.81E-03
Decontamination	
Fraction of radioactivity retained after washing for leafy vegetables and produce	5.00E-01
Fractions Grown In Garden Of Interest	
Produce ingested	1.00E+00
Leafy vegetables ingested	1.00E+00
Ingestion Ratios:	
Immediate Surrounding Area/Total Within Area	
Vegetables	7.00E-01
Meat	4.40E-01
Milk	4.00E-01
Minimum Ingestion Fractions From Outside Area (Actual fractions of food types from outside area can be greater than the minimum fractions listed below.)	
Vegetables	0.00E+00
Meat	0.00E+00
Milk	0.00E+00

Table 2: Values for CAP88 Site Independent Parameters

Parameter (Units)	Value
Human Food Utilization Factors	
Produce ingestion (kg/y)	1.76E+02
Milk ingestion (L/y)	1.12E+02
Meat ingestion (kg/y)	8.50E+01
Leafy vegetable ingestion (kg/y)	1.80E+01

1.2 Methodology to Estimate 2010 Population

In order to calculate the dose and risk to the population surrounding the uranium site, it is necessary to know the distribution of the surrounding population at each site. Normally, the population doses and risks are calculated out to a distance of 80-kilometers (50-miles) from the site. Therefore, it is necessary to know the population to a distance of 80-kilometers from each site in each of the 16 compass directions. This information is not normally available from census data to the degree of specificity needed in this assessment. However, in 1973, the EPA wrote a computer program, SECPOP, that would convert census block data into the desired 80-kilometer population estimates for any specific latitude and longitude within the continental United States (Sandia 2003). The NRC adopted this program to perform siting reviews for license applications, and has updated the program to use the 2000 census data.

The latitude and longitude for each uranium site listed in Table 1 was entered into SECPOP, which calculated the 80-kilometer, 16-sector 2000 population distribution for each site. The SECPOP-calculated population distributions are provided in the site-specific subsections of Section 2.0.

It was desired to use 2010 population data rather than the 2000 census data available in SECPOP. The U.S. Census Bureau has estimates of the population in every county for each year from 2001 though 2009 (http://www.census.gov/popest/counties/files/CO-EST2009-ALLDATA.csv). For each uranium site, the 2000 census data and 2009 estimate were used to calculate an annual population adjustment factor specific for the county in which the site is located. That annual adjustment factor was then used to calculate an adjustment factor to bring the SECPOP population distribution from 2000 to 2010.

Table 3: 2000 to 2010 Population Adjustment Factors

Site	State	County	Population		Factor	
			2000	2009	Annual	2010
Cañon City Mill	CO	Fremont	46145	47815	0.0040	1.04
Crow Butte	NE	Dawes	9060	8735	-0.0041	0.96
Western Generic	NM	McKinley	74798	70513	-0.0065	0.94
Alta Mesa 1, 2, 3	TX	Brooks	7976	7377	-0.0086	0.92
Kingsville Dome 1,3	TX	Kleberg	31549	30647	-0.0032	0.97
White Mesa Mill	UT	San Juan	14413	15049	0.0048	1.05
Eastern Generic	VA	Culpeper	34262	46502	0.0345	1.40
Smith Ranch – Highland	WY	Converse	12052	13578	0.0133	1.14
Christensen / Irigaray	WY	Campbell	33698	43967	0.0300	1.34
Sweetwater Mill	WY	Sweetwater	37613	41226	0.0102	1.11

2.0 DETAILED RISK ESTIMATES

For each uranium site that is analyzed, this section presents a brief description, including an aerial view of the site, followed by the population distribution surrounding the site and the assumptions made concerning food production. The meteorological data used to analyze each site are presented next. Lastly, the methodology used to estimate the annual radon released from each site is discussed and the radon release presented.

2.1 Sweetwater[1]

The Sweetwater Uranium Project, the only conventional mill remaining in Wyoming, consists of a mill and ancillary structures and is located some 65 km northwest of the Town of Rawlins, in south-central Wyoming's Great Divide Basin. The mill was constructed in 1979 and 1980 and NRC source materials license SUA-1350 (Docket Number: 40-8584) was obtained in February 1979 to permit processing of uranium ore. The mill operated between 1981 and 1983 and has been on standby status since mid-1983. During its three years of operation, the Sweetwater facility produced a total of 1,292,000 lbs of U_3O_8 from a total of 2,340,535 tons of ore (sourced from an adjacent, now depleted ore body which has since been reclaimed), at a reported recovery rate of 90%. Operations at Sweetwater are currently suspended; however, the license has been renewed, and is currently set to expire on November 10, 2014. The Kennecott Uranium Company (KUC) operates and manages the Sweetwater Uranium Project for the Green Mountain Mining Venture. With the continued increase in the price of uranium, KUC may either sell or restart the Sweetwater mill, shown in Figure 1.

[1] The description of the Sweetwater site was abstracted from various sources, including KUC 1994, KUC 2004, and Uranium One 2006, while the aerial view of the Sweetwater site was obtained from Google Maps.

Figure 1: Sweetwater – Aerial View

2.1.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Sweetwater site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 4. To adjust the 2000 population data to 2010, the CAP88 Sweetwater population dose was multiplied by 1.11, see Section 1.2 and Table 3.

Table 4: Sweetwater Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	3	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	3

Table 4: Sweetwater Population Data

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	0	3	75	26	0	0
NNW	0	0	2	37	0	7
NW	0	0	0	0	0	19
WNW	0	0	0	0	0	0
W	0	2	0	2	0	0
WSW	0	0	0	0	0	0
SW	0	0	0	2	102	1
SSW	2	47	0	3	0	0
S	0	0	256	0	2	0
SSE	0	2	2	0	12	0
SE	0	3	43	0	0	0
ESE	0	5	7	137	9097	430
E	3	11	18	5	0	3
ENE	3	0	19	16	0	5
NE	10	97	3	6	7	13
NNE	3	0	0	29	21	0

The agricultural productivity factors for Wyoming were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Sweetwater site population dose calculation.

Beef Cattle Density (cattle/km^2):	5.12
Milk Cattle Density (cow/km^2):	0.0579
Land Cultivated for Vegetable Crops:	0.159%

The distance and direction to the RMEI were identified in the Revised Environmental Report (KUC 1994) as:

> The nearest resident is approximately 17 air miles northeast of the Site and the nearest town is Bairoil, located approximately 22 air miles northeast of the Site. [KUC 1994, page 1-1]

Notice, that the Table 4 SECPOP estimate places the nearest individual at a distance of 5 km to 10 km in the NW direction. To calculate the RMEI dose and risk for this study, the Table 4 RMEI distance and direction were used.

2.1.2 Meteorology

The CAP88 computer program is provided with a weather library of meteorological data from over 350 NWS stations. For the Sweetwater site, the CAP88-provided meteorological data for the period 1983 through 1987 was obtained from the site's Revised Environmental Report (KUC 1994) and the associated MILDOS analysis (EnecoTech 1994). Table 5 shows the directional-dependent average wind speed for each stability class, while Table 6 gives the stability class frequency.

Table 5: Sweetwater Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	0.000	1.812	2.477	7.722	5.786	2.497	0.000
NNW	0.000	1.423	2.153	7.706	5.898	2.328	0.000
NW	0.000	1.696	1.780	6.684	6.140	2.475	0.000
WNW	0.000	1.501	1.740	6.256	5.517	2.432	0.000
W	0.000	1.365	1.667	6.705	5.685	2.294	0.000
WSW	0.000	1.918	1.897	7.114	5.984	2.410	0.000
SW	0.000	2.045	2.380	6.838	5.788	2.797	0.000
SSW	0.000	1.825	1.982	7.633	5.820	2.955	0.000
S	0.000	1.042	1.177	7.021	6.227	2.171	0.000
SSE	0.000	1.042	1.026	8.634	7.032	1.384	0.000
SE	0.000	1.822	2.446	8.762	5.876	2.981	0.000
ESE	0.000	1.984	2.553	9.262	6.150	3.028	0.000
E	0.000	1.708	2.681	8.078	5.647	2.606	0.000
ENE	0.000	1.851	2.583	8.400	6.069	2.666	0.000
NE	0.000	1.507	2.422	8.611	6.027	2.714	0.000
NNE	0.000	1.549	2.438	8.144	5.963	2.709	0.000

Table 6: Sweetwater Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0000	0.0203	0.1677	0.5699	0.0624	0.1797	0.0000
NNW	0.0000	0.0266	0.1551	0.5723	0.0650	0.1811	0.0000
NW	0.0000	0.0197	0.2033	0.4704	0.0827	0.2240	0.0000
WNW	0.0000	0.0275	0.1880	0.3991	0.0753	0.3100	0.0000
W	0.0000	0.0248	0.1914	0.4613	0.0794	0.2430	0.0000
WSW	0.0000	0.0217	0.1591	0.5108	0.0690	0.2394	0.0000
SW	0.0000	0.0177	0.1398	0.4836	0.0945	0.2644	0.0000
SSW	0.0000	0.0234	0.1128	0.4580	0.1166	0.2893	0.0000
S	0.0000	0.0096	0.1540	0.3018	0.0882	0.4464	0.0000
SSE	0.0000	0.0222	0.0630	0.7737	0.0670	0.0741	0.0000
SE	0.0000	0.0080	0.0269	0.7848	0.0716	0.1087	0.0000
ESE	0.0000	0.0021	0.0542	0.7959	0.0542	0.0935	0.0000
E	0.0000	0.0103	0.0913	0.7018	0.0569	0.1397	0.0000
ENE	0.0000	0.0114	0.0960	0.6874	0.0683	0.1370	0.0000
NE	0.0000	0.0102	0.0859	0.7059	0.0680	0.1301	0.0000
NNE	0.0000	0.0089	0.1197	0.6475	0.0712	0.1527	0.0000
TOTAL	0.0000	0.0156	0.1269	0.6039	0.0713	0.1821	0.0000

2.1.3 Radon Release

Even though KUC provides the NRC with semi-annual effluent reports for the Sweetwater site, as required by 10CFR §40.65, radon releases are not included. Rather, KUC provides the upwind and downwind radon concentrations. Thus, in order to perform the risk assessment, it was necessary to refer to the Revised Environmental Report (KUC 1994) for a Sweetwater site-specific radon source term. The following information on radon releases was taken from Section 3.4 of the Sweetwater Revised Environmental Report (KUC 1994).

Ore Stockpiles, Crushing and Grinding

> A total of 604.6 Ci/year of radon is estimated to be released by ore handling, including both radon release from the mill exhaust stack and the ore loading area at the grizzly. [KUC 1994, page 3-9]

Leaching

> The leach tanks are covered and are also equipped with a vent system. The air in the tanks will have small concentrations of radon-222 and sulfuric acid mist. This air will be vented through a wet scrubber (…). Exhaust from the scrubber will contain traces of radon-222. [KUC 1994, page 3-9]

Counter-Current Decantation (CCD) Thickening

> Some water vapor, acid mist, and minor amounts of radon-222 will escape into the atmosphere from the open thickeners. [KUC 1994, page 3-11]
>
> In accordance with 40 CFR 61, the tailings impoundments will be 40 acres in area at capacity and no more than two impoundments will be operated at any one time. Radon-222 emissions will be minimized from the tailings impoundment, by keeping the tailings in the operating cell wet. When operations are complete, the final surface area of the six reclaimed impoundments and the original impoundment, to be used as an evaporation pond, is estimated to be approximately 280 acres. Assuming the maximum allowable emission of 20.0 pCi/m^2/sec after reclamation, annual radon-222 emissions can be no more than 714 Ci/year for the six proposed impoundments and the existing impoundment, combined. [KUC 1994, page 3-11]

Solvent Extraction

Section 3.4 of the Revised Environmental Report does not provide any radon source term for the solvent extraction phase.

Precipitation

> Air from the yellowcake precipitators, and thickener area will be passed through a wet scrubber and vented to the atmosphere from stack S-6 (…). The exhaust gases will contain approximately 80 - 120 ppm ammonia and traces of radon-222. [KUC 1994, page 3-12]

In addition to the source term discussion provided in Section 3.4, the Revised Environmental Report provides estimated annual radon releases for the facility during operation at specific release points in Table 5.2-1, which has been reproduced in this report as Table 7. Unlike Section 3.4, which is specific to the mill area, Table 5.2-1 includes the radon releases from "the six proposed [in 1994] 40-acre tailings cells, and the existing [in 1994] tailings cell." From Table 7, it can be seen that including the radon contribution from the tailing cells results in a time-dependent annual radon release.

Table 7: Sweetwater Radon Release

Source		Radon Release (Ci/yr)
Dryer		—
Ore Receiving		604.6
Leaching		—
Ore Handling and Storage		—
Ore Dust		—
Tailings	Yr. 1-3	1001
	Yr. 4-6	2861
	Yr. 7-9	2963
	Yr. 10-12	3065
	Yr. 13-15	3167
	Yr. 16-18	3269
	Yr. 19-21	2370
	Yr. 22-24	714

Source: KUC 1994, Table 5.2-1

It should also be noted that the tailing cell radon releases shown in Table 7 were based on an assumed radon flux of 20 pCi/m^2-s from each of the covered cells or impoundments. To demonstrate compliance with 40CFR Part 61, Subpart W, KUC has annually conducted testing on the facility's tailings impoundment for radon emissions (KUC 2004). The results of that testing are shown in Table 8. In addition to showing the measured radon flux, Table 8 also shows what the largest annual radon tailing release would be, based on the measured flux, as opposed to using the 40CFR §61.252 standard of 20 pCi/m^2-s.

Table 8: Sweetwater Radon Flux Testing Results

Test Date	Radon Flux (pCi/m^2-s)	Yr. 16-18 Tailings Release (Ci/yr)
7-Aug-90	9.00	1471
13-Aug-91	5.10	834
5-Aug-92	5.60	915
24-Aug-93	5.00	817
23-Aug-94	5.00	817
15-Aug-95	3.59	587
13-Aug-96	5.47	894
26-Aug-97	4.23	691
11-Aug-98	2.66	435
10-Aug-99	1.27	208

Table 8: Sweetwater Radon Flux Testing Results

Test Date	Radon Flux (pCi/m^2-s)	Yr. 16-18 Tailings Release (Ci/yr)
8-Aug-00	4.05	662
15-Aug-01	6.98	1141
14-Aug-02	4.10	670
13-Aug-03	7.11	1162

Source: KUC 2004, Appendix 6, Page 1

Based on the radon release data provided in Table 7 and Table 8, several annual radon releases may be calculated:

§61.252 Standard, Maximum	3,874	Ci/yr
§61.252 Standard, Average	3,031	Ci/yr
Measured, Maximum	2,075	Ci/yr
Measured, Average	1,204	Ci/yr

2.1.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Sweetwater site are shown in Table 9.

Table 9: Sweetwater Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	2075	1204
RMEI (7500m NW)	Dose (mrem/yr)	5.6E-04	1.2E+00	6.7E-01
	LCF Risk (yr^{-1})	2.9E-10	6.0E-07	3.5E-07
Population	Dose (person-rem/yr)	2.3E-04	4.9E-01	2.8E-01
	LCF Risk (yr^{-1})	1.4E-09	2.9E-06	1.7E-06

2.2 White Mesa[2]

The White Mesa mill is a fully licensed, conventional uranium processing mill with a vanadium co-product recovery circuit, shown in Figure 2. Located six miles south of Blanding, Utah, in the southeastern part of the state, White Mesa is the only conventional uranium mill currently operating in the United States. The White Mesa mill is licensed by the state of Utah (Radioactive Materials License: UT1900479), and is owned and operated by Denison Mines (USA). Construction of the White Mesa mill started in 1979, and conventionally mined

2 The description of the White Mesa site was abstracted from various sources, including Denison 2007 and Melbye 2008, while the aerial view of the White Mesa site was obtained from Google Maps.

uranium/vanadium ore was first processed in May 1980. To date, White Mesa has produced over 30 million pounds of U_3O_8 and 33 million pounds of V_2O_5.

Figure 2: White Mesa – Aerial View

Operations at White Mesa begin with weighting, receiving, sampling, and stockpiling of conventional ore and other feed materials from various offsite sources. Mine ore, as well as stockpiled crushed ore, is fed into the semi-autogenous grinding (SAG) mill. The ground feed material, stored as a wet slurry in one of two agitated tanks, is then fed to the first stage of leach. The two-stage acid leach is followed by the recovery of uranium bearing pregnant solution in a CCD system. Once the pregnant solution is clarified, it is pumped to the solvent extraction (SX) circuit. Vanadium, when recovered, is stripped from the barren uranium raffinate, also using a solvent extraction circuit. Both uranium and vanadium are precipitated in their respective circuits, followed by drying and packaging.

2.2.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the White Mesa site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 10. To adjust the 2000 population data to 2010, the CAP88 White Mesa population dose was multiplied by 1.05, see Section 1.2 and Table 3.

Table 10: White Mesa Population Data

Dir	Distance (km)						
	0 to 1	**1 to 2**	**2 to 3**	**3 to 4**	**4 to 5**	**5 to 10**	**10 to 20**
N	0	0	3	69	567	2813	73
NNW	0	0	0	0	0	24	0
NW	0	0	52	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	1	0
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
S	0	0	0	0	0	7	247
SSE	0	5	0	0	0	0	40
SE	0	0	0	0	0	0	12
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ENE	0	14	0	0	0	0	0
NE	0	0	0	0	180	0	1
NNE	0	0	0	79	0	25	16

Dir	Distance (km)					
	20 to 30	**30 to 40**	**40 to 50**	**50 to 60**	**60 to 70**	**70 to 80**
N	0	0	6	4	0	28
NNW	0	0	0	0	16	0
NW	0	0	0	0	0	0
WNW	0	0	0	0	0	0
W	0	8	8	2	0	2
WSW	0	0	0	0	0	0
SW	0	2	0	88	352	195
SSW	0	195	163	19	175	367
S	1	307	105	264	488	617
SSE	62	710	431	116	159	539
SE	83	232	860	340	14	5
ESE	3	8	22	140	231	3045
E	0	2	135	130	463	1361
ENE	7	26	88	1046	168	6
NE	10	100	91	165	66	6
NNE	61	2035	51	9	8	1

The agricultural productivity factors for Utah were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the White Mesa site population dose calculation.

Beef Cattle Density (cattle/km^2):	2.84
Milk Cattle Density (cow/km^2):	0.446
Land Cultivated for Vegetable Crops:	0.183%

The distance and direction to the RMEI were identified in the Cell 4B dose assessment (SENES 2008) as:

> … the nearest "potential" resident is approximately 1.2 miles (1.9 km) north of the Mill, near the location of air monitoring station BHV-I. The nearest actual resident is located approximately 1.6 miles (2.5 km) north of the mill. [SENES 2008, page 5-3]

Notice that the Table 10 SECPOP estimate places the nearest individuals to White Mesa at a distance of 1 to 2 km in the SSE and ENE directions. To calculate the RMEI dose and risk for this study, the Table 10 RMEI distances and directions were used, since they are closer than the nearest actual resident.

2.2.2 Meteorology

The White Mesa mill has an onsite meteorological monitoring station that records wind speed, wind direction, and stability class. This onsite meteorological data were used by Denison to formulate a joint frequency distribution for the dose calculations performed as part of their White Mesa license renewal application. For this risk assessment, the meteorological data from the license renewal application was reformatted so that it could be processed by the CAP88 auxiliary program, WINDGET (Trinity 2007), which generated a meteorological data file in the format required by CAP88 (i.e., a .WND file). Table 11 shows the directional-dependent average wind speed for each stability class that was used in this risk assessment, while Table 12 gives the stability class frequency.

Table 11: White Mesa Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	2.727	4.293	5.984	7.051	3.651	1.924	0.000
NNW	2.670	4.234	5.430	5.673	3.186	1.857	0.000
NW	2.495	4.375	5.509	6.080	2.818	1.793	0.000
WNW	2.341	3.914	4.958	5.741	3.011	1.650	0.000
W	2.065	3.635	5.898	5.238	2.980	1.684	0.000
WSW	2.086	3.598	5.089	5.043	2.779	1.745	0.000
SW	1.833	3.217	4.058	4.495	3.280	1.956	0.000
SSW	2.130	3.399	3.697	4.366	4.326	2.229	0.000
S	1.993	3.388	4.827	5.115	4.516	2.343	0.000
SSE	2.245	4.794	6.375	7.140	4.766	2.429	0.000
SE	2.384	4.103	6.302	7.199	4.302	2.289	0.000
ESE	2.378	4.104	5.912	5.791	3.457	2.178	0.000
E	2.381	4.290	6.150	7.401	3.951	2.222	0.000
ENE	2.571	4.617	6.414	7.725	4.031	1.915	0.000
NE	2.773	4.565	6.196	7.945	4.018	1.957	0.000
NNE	2.910	4.580	6.102	8.225	4.523	2.077	0.000

Table 12: White Mesa Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	0.2581	0.2125	0.1837	0.2509	0.0372	0.0576	0.0000
NNW	0.3351	0.2376	0.1578	0.1507	0.0319	0.0869	0.0000
NW	0.3286	0.1690	0.1314	0.2253	0.0282	0.1174	0.0000
WNW	0.3637	0.1318	0.0727	0.1545	0.0500	0.2273	0.0000
W	0.3938	0.0933	0.0622	0.1088	0.0778	0.2642	0.0000
WSW	0.3098	0.1059	0.0784	0.1726	0.0588	0.2745	0.0000
SW	0.1223	0.0526	0.0782	0.3912	0.1579	0.1977	0.0000
SSW	0.0334	0.0193	0.0405	0.4585	0.3331	0.1151	0.0000
S	0.0473	0.0164	0.0327	0.4064	0.3273	0.1700	0.0000
SSE	0.0595	0.0280	0.0653	0.5449	0.1272	0.1750	0.0000
SE	0.0794	0.0451	0.1155	0.4567	0.1119	0.1913	0.0000
ESE	0.1575	0.0822	0.1575	0.3390	0.0788	0.1849	0.0000
E	0.1749	0.0933	0.1399	0.3907	0.0787	0.1224	0.0000
ENE	0.1885	0.1195	0.1747	0.3839	0.0529	0.0805	0.0000
NE	0.1781	0.1557	0.2380	0.3383	0.0359	0.0539	0.0000
NNE	0.1888	0.1958	0.2118	0.3247	0.0380	0.0410	0.0000
TOTAL	0.1560	0.0999	0.1161	0.3595	0.1397	0.1287	0.0000

2.2.3 Radon Release

SENES 2008 presents the results of a dose assessment that was performed to quantify the dose impact from the proposed development of new tailings Cell 4B. Two sources of uranium ore are considered for processing by the White Mesa mill: Colorado Plateau (0.25% U_3O_8 and 1.5% V_2O_5) and Arizona Strip (0.637% U_3O_8 and no V_2O_5). For both ores, Section 4 of SENES 2008 documents the source term, including radon, from each area of the White Mesa mill, and is summarized below.

Grinder

> The Rn-222 concentration in the ore was assumed to be equal to the U-238 concentration. The Rn-222 released during wet grinding is 92.7 and 236 Ci/yr for Colorado Plateau and Arizona Strip ore, respectively. [SENES 2008, page 4-3]

Ore Dump to Grizzly

SENES 2008 does not indicate any radon release from the grizzly (i.e., screener).

Yellowcake Stacks

> Since the ore processing steps reject nearly all the radium to the tailings, very little radon is released during the production of yellowcake. No significant radon releases occur during yellowcake drying and packaging, since only about 0.1% of the original Ra-226 in the ore is found in yellowcake. Therefore, the amount of Rn-222 emitted from the yellowcake stack was assumed to be negligible. [SENES 2008, page 4-4]

Vanadium Stack

> …, the emissions from the remaining radionuclides [including radon] were assumed to be negligible and in any event would likely be discharged to the tailings cells. [SENES 2008, page 4-4]

Ore Pads

> Rn-222 will be produced in the ore pads from the decay of Ra-226. The estimated annual radon release rate from the ore pads is 375 and 956 Ci/yr for Colorado Plateau and Arizona Strip ore, respectively. [SENES 2008, page 4-5]

Active Tailings Cells

> …, the total annual radon release rates for active tailings cell 3 and 4A and 4B were estimated to be 179 Ci/yr for tailings cell 3 and 102 Ci/yr for each of tailings cells 4A and 4B. These estimates are extremely conservative because it was assumed that the radon release rate of 20 pCi/m^{2}s (…) occurred over the entire area of each cell. [SENES 2008, page 4-7]

Inactive Tailings Cells

> …, the total annual radon release from the tailings cells 2 and 3 with interim soil covers were 85.3 and 89.4 Ci/yr, respectively. [SENES 2008, page 4-7]

Table 13 summarizes the SENES 2008 annual radon release from the White Mesa uranium mill.

Table 13: White Mesa Radon Release

Source	Radon Release (Ci/yr)	
	Colorado Plateau	Arizona Strip
Grinding	92.7	236
Ore Dump to Grizzly	—	
Ore Pads	375	956
North Yellowcake Stack	—	
South Yellowcake Stack	—	
Tailing Cell 2: Interim Soil Cover	85.3	
Tailing Cell 3: Interim Soil Cover	89.4	
Tailing Cell 3: Active	179	
Tailing Cell 4A: Active	102	
Tailing Cell 4B: Active	102	
Vanadium Stack	—	N/A
Total	1,025	1,750

Source: SENES 2008, Tables 4.5-1 and 4.5-2

2.2.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the White Mesa site are shown in Table 14.

Table 14: White Mesa Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	**Maximum**	**Average**
		1	1750	1388
RMEI (1500m SSE)	Dose (mrem/yr)	5.8E-03	1.2E+01	7.0E+00
	LCF Risk (yr^{-1})	3.1E-09	6.4E-06	3.7E-06
Population	Dose (person-rem/yr)	2.5E-03	5.2E+00	3.0E+00
	LCF Risk (yr^{-1})	1.6E-08	3.4E-05	2.0E-05

2.3 Cañon City[3]

The Cañon City mill, shown in Figure 3, is located approximately two miles south of downtown Cañon City in Fremont County, Colorado. The community of Lincoln Park borders the site to the north and the housing developments of Dawson Ranch, Wolf Park, and Eagle Heights are located along the mill's western boundary. The 2,500-acre site includes two inactive mills, ore stockpile areas, a partially reclaimed tailings pond disposal area (i.e., the old ponds area), and a current tailings pond disposal area (i.e., the lined "main impoundment area"). A large portion of the site is used to store waste products in the impoundment area.

[3] The description of the Cañon City site was abstracted from various sources, including CDPHE 2007, Cotter 2010, and ATSDR 2010, while the aerial view of the Cañon City site was obtained from Google Maps.

Figure 3: Cañon City – Aerial View

The Cañon City mill, which is owned by the Cotter Corporation, began operations in 1958, extracting uranium ore using an alkaline leach process. At that time, the mill was licensed by the U.S. Atomic Energy Agency; currently it is licensed by the state of Colorado (Radioactive Materials License: Colo. 369-01). In 1979, the facility switched to an acid leach process for extracting uranium. Cotter suspended primary operations in 1987, and only limited and intermittent processing occurred until the facility resumed operations in 1999 with a modified alkaline-leaching capability until 2001. Cotter refabricated the mill circuits between 2002 and 2005 to operate using an acid process, since March 2006 the mill has been in storage. Current accelerated efforts to close down contaminated facilities at the Cañon City site may be aimed at clearing a path for possible uranium processing in the future and do not indicate that Cotter plans to leave the 2,600-acre site. There is indication that Cotter is planning a $200-million rebuild of the mill by 2014, when it expects to treat ore from the Mount Taylor mine in New Mexico.

2.3.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Cañon City site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 15. To adjust the 2000 population data to 2010, the CAP88 Cañon City population dose was multiplied by 1.04, see Section 1.2 and Table 3.

Table 15: Cañon City Population Data

Dir	Distance (km)					
	0 to 1	**1 to 2**	**2 to 3**	**3 to 4**	**4 to 5**	**5 to 10**
N	0	18	37	915	1198	9911
NNW	0	0	20	114	1699	1663
NW	0	0	105	0	20	0
WNW	0	16	38	0	0	0
W	0	71	27	0	0	0
WSW	0	0	0	0	30	0
SW	0	0	0	0	0	7
SSW	0	0	0	0	0	0
S	0	0	0	0	0	0
SSE	0	0	0	9	0	8
SE	0	0	0	0	0	32
ESE	0	0	0	0	0	1484
E	0	0	0	0	0	2040
ENE	0	0	0	106	52	2961
NE	0	0	31	679	295	1939
NNE	0	0	138	942	1046	4365
Dir	**Distance (km)**					
	20 to 30	**30 to 40**	**40 to 50**	**50 to 60**	**60 to 70**	**70 to 80**
N	4	1310	1083	2224	5576	450
NNW	4	46	369	347	251	132
NW	93	61	43	102	55	117
WNW	0	39	41	41	6061	1261
W	196	225	315	996	290	901
WSW	637	136	169	32	249	152
SW	205	812	106	13	726	134
SSW	341	737	261	0	98	15
S	145	5	253	145	180	155
SSE	295	56	699	1683	754	160
SE	107	236	506	513	1104	36
ESE	16	1688	8507	90006	10649	1976
E	1350	1081	6010	14530	20	84
ENE	733	12	43	3498	203	578
NE	7	215	1369	111270	191995	52423
NNE	38	627	99	15816	66131	34794

The agricultural productivity factors for Colorado were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Cañon City site population dose calculation.

Beef Cattle Density (cattle/km^2):	1.13
Milk Cattle Density (cow/km^2):	0.35
Land Cultivated for Vegetable Crops:	1.39%

The distance and direction to the RMEI were identified in the Agency for Toxic Substances and Disease Registry's public health assessment (ATSDR 2010) as:

> The nearest residence is about 0.25 miles from the mill [ATSDR 2010, page 1].

Notice that the Table 15 SECPOP estimate places the nearest individuals to Cañon City at a distance of 1 to 2 km in the North, West, and WNW directions. Through analysis using CAP88 the RMEI was found to be located 1 to 2 km North. To calculate the RMEI dose and risk for this study, the Table 15 RMEI distances and directions were used, since the public health assessment did not specify the direction to the nearest resident.

2.3.2 Meteorology

The CAP88 computer program is provided with a weather library of meteorological data from over 350 NWS stations. For the Cañon City site, the CAP88-provided weather data for Colorado Springs, CO (CAP88 File: 93037.WND) were used. The period of record for this data included the years 1988 through 1992. Table 16 shows the directional dependent average wind speed for each stability class, while Table 17 gives the stability class frequency, used in the Cañon City analysis.

Table 16: Cañon City Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	1.900	2.710	4.450	5.320	3.570	1.950	0.000
NNW	1.830	2.880	4.610	5.480	3.760	2.030	0.000
NW	1.950	2.980	4.310	5.200	3.760	2.070	0.000
WNW	1.850	2.820	3.760	4.690	3.700	2.020	0.000
W	1.880	2.360	3.450	4.390	3.650	2.030	0.000
WSW	1.640	2.190	3.490	4.660	3.550	2.020	0.000
SW	1.880	2.440	3.220	4.960	3.740	2.230	0.000
SSW	1.850	2.120	3.970	5.170	3.960	2.300	0.000
S	2.030	2.030	4.200	6.540	4.010	2.250	0.000
SSE	1.480	2.340	3.790	7.000	3.940	2.150	0.000
SE	2.030	2.120	3.590	6.710	3.740	2.080	0.000
ESE	2.020	2.200	3.320	6.500	3.570	1.930	0.000
E	1.880	1.870	3.750	6.120	3.470	1.840	0.000
ENE	1.880	2.330	3.730	6.030	3.470	1.860	0.000
NE	2.030	2.400	3.480	6.020	3.450	1.840	0.000
NNE	1.780	2.720	4.200	5.960	3.410	1.860	0.000

Table 17: Cañon City Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	0.0116	0.1188	0.2367	0.4935	0.0654	0.0741	0.0000
NNW	0.0071	0.0907	0.2116	0.5325	0.0851	0.0730	0.0000
NW	0.0123	0.0988	0.2017	0.4892	0.1146	0.0833	0.0000
WNW	0.0164	0.1108	0.1983	0.3762	0.1622	0.1362	0.0000
W	0.0154	0.1102	0.1597	0.3290	0.1767	0.2090	0.0000
WSW	0.0085	0.0823	0.1231	0.3181	0.1974	0.2706	0.0000
SW	0.0044	0.0474	0.0783	0.2728	0.2647	0.3324	0.0000
SSW	0.0021	0.0220	0.0577	0.2310	0.3668	0.3204	0.0000
S	0.0021	0.0190	0.0658	0.4320	0.2807	0.2004	0.0000
SSE	0.0023	0.0226	0.0603	0.6097	0.1893	0.1159	0.0000
SE	0.0017	0.0307	0.0855	0.5660	0.1750	0.1410	0.0000
ESE	0.0045	0.0585	0.1043	0.5250	0.1552	0.1525	0.0000
E	0.0108	0.0861	0.1416	0.4909	0.1250	0.1457	0.0000
ENE	0.0204	0.1346	0.1629	0.4512	0.0858	0.1451	0.0000
NE	0.0180	0.1876	0.1914	0.4188	0.0725	0.1118	0.0000
NNE	0.0149	0.1415	0.2149	0.4723	0.0712	0.0852	0.0000
TOTAL	0.0074	0.0678	0.1321	0.4401	0.1863	0.1664	0.0000

2.3.3 Radon Release

Cotter Corporation does not include the site's radon release in its semi-annual effluent reports that are prepared for the Colorado Department of Public Health and Environment. However, until recently, the reports did include the results of radon flux measurements for the Primary and Secondary Impoundments in their semi-annual effluent reports. The radon flux measurements can be used to calculate an annual radon release following the guidance provided in Quinn 2010. This was done, and the resulting annual radon releases from 1999 through 2009 are tabulated in Table 18 and shown graphically in Figure 4.

Table 18: Cañon City Annual Radon Release

Year	Radon Flux (pCi/m^2-s)	Radon Release (Ci/y)
1999	13.2	180
2000	7.7	105
2001	7.9	108
2002	15.9	217
2003	5.8	79
2004	6.2	85
2005	7.6	104
2006	6.1	83
2007	14	191
2008	19.7	269
2009	13.4	183

Sources: Cotter 2007, Figure 4-19; Cain 2008, page 47; Cain 2010, page 50

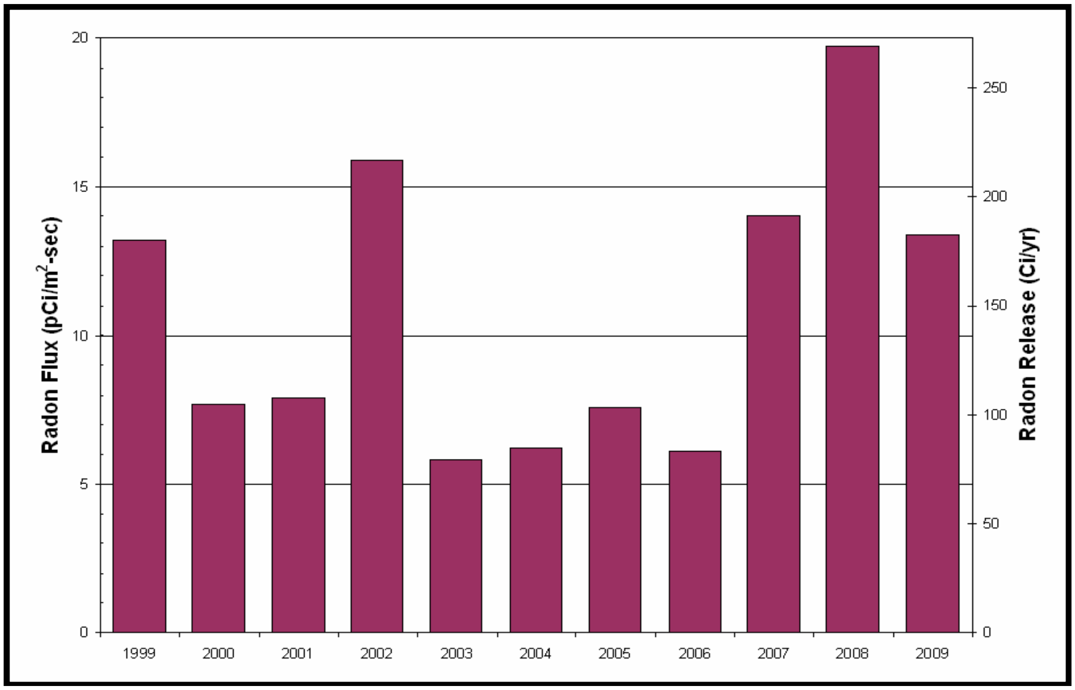

Figure 4: Cañon City Radon Flux and Annual Release

Although the radon releases given in Table 18 and Figure 4 are only from the impoundments, it is assumed that other onsite sources of radon would be small by comparison. The basis for this assumption is that no milling operations have occurred at Cañon City since 2005, and there is not likely much uranium onsite to act as a source of radon. This is supported by the monthly release rates for uranium, thorium, and radium, which are very low. Finally, Cotter 2010 points out that the offsite radon daughter (i.e., ^{210}Pb) concentrations (which are measured and reported in the semiannual effluent reports) are consistent with what would be expected from non-Cañon City Milling Facility radon:

> Results for ^{210}Pb at all monitoring locations are controlled by regional ^{222}Rn concentrations and do not exhibit discernible effects from milling facility activities. [Cotter 2010, page 5-4]

2.3.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Cañon City site are shown in Table 19.

Table 19: Cañon City Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	269	146
RMEI (1500m N)	Dose (mrem/yr)	5.0E-03	1.0E+01	6.0E+00
	LCF Risk (yr^{-1})	2.6E-09	5.4E-06	3.1E-06
Population	Dose (person-rem/yr)	2.4E-02	4.9E+01	2.9E+01
	LCF Risk (yr^{-1})	1.5E-07	3.1E-04	1.8E-04

2.4 Smith Ranch – Highland[4]

Power Resources Incorporated (PRI), a wholly owned subsidiary of the Cameco Corporation, operates the Highland and Smith Ranch ISL uranium mines located in eastern Wyoming, approximately 16 miles north of Glenrock in Converse County. In 1987, ISL facilities were constructed at the Highland mine, and commercial production began a year later. Cameco acquired PRI in 1997. The first ISL pilot operation began in 1981 at the Smith Ranch; the second operation began in 1984. Commercial ISL facilities were constructed in 1996 and began producing a year later. Cameco then acquired the Smith Ranch from Rio Algom Mining Corporation in 2002 and consolidated the Highland and Smith Ranch operations (the Highland license, SUA-1511, was integrated into the license: SUA-1548). The Highland and Smith Ranch mines are currently the largest operated uranium production facilities in the United States, with lifetime production capacities of two million pounds of uranium from each facility. Proven and probable reserves total 5.9 million pounds of U_3O_8, and in 2009, production was 1.8 million pounds of U_3O_8.

The permit area for the combined Smith Ranch – Highland properties contains 30,760 acres. The main facilities at the Smith Ranch – Highland Uranium Project (SR-HUP), besides the well fields, include the two yellowcake processing plant sites and related facilities that are located within the former Bill Smith Mine site (Smith Ranch Main Office Central Processing Plant [CPP] Complex) and the former Exxon Highland Mine site (HUP Central Plant/Office Complex). Since 2002, the HUP facilities have been on stand-by status, although in the future it may be used as a resin stripping, elution, and precipitation facility. All yellowcake processing, office, and related activities currently are occurring at Smith Ranch, shown in Figure 5. In association with the Smith Ranch CPP is a lined, two-celled evaporation pond to assist with wastewater disposal. Additional lined evaporation ponds consisting of 5- to 15-acre cells may be constructed as needed. Waste water is also disposed at two deep disposal wells at Smith Ranch and one deep disposal well at Highland.

[4] The description of the Smith Ranch – Highland site was abstracted from various sources, including RAMC 1999, Trihydro 2005, Melbye 2008, Cameco 2009, and Cameco 2010b, while the aerial view of the Smith Ranch – Highland site was obtained from Google Maps.

Figure 5: Smith Ranch – Aerial View

2.4.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Smith Ranch – Highland site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 20. To adjust the 2000 population data to 2010, the CAP88 Smith Ranch – Highland population dose was multiplied by 1.14, see Section 1.2 and Table 3.

Table 20: Smith Ranch – Highland Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	0	10
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	6
SW	0	0	0	0	0	0	33
SSW	0	0	0	0	0	0	133
S	0	0	0	0	0	0	19
SSE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	9
ESE	0	0	0	0	0	0	0
E	0	0	0	0	0	2	0
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	4
NNE	0	0	0	0	0	0	6

Table 20: Smith Ranch – Highland Population Data

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	7	5	13	30	4	172
NNW	2	3	14	10	10	11
NW	0	0	0	17	590	31
WNW	0	0	13	3	6	2
W	0	0	2	304	24	123
WSW	37	216	926	42155	20374	756
SW	2418	137	179	63	66	32
SSW	893	25	27	5	0	0
S	80	37	33	6	5	4
SSE	77	388	586	88	35	63
SE	19	1234	5161	78	106	54
ESE	16	5	21	29	22	44
E	5	8	5	16	20	13
ENE	0	21	30	3	21	12
NE	9	0	14	14	4	19
NNE	4	14	9	3	33	1299

The agricultural productivity factors for Wyoming were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Smith Ranch – Highland site population dose calculation.

Beef Cattle Density (cattle/km^2):	5.12
Milk Cattle Density (cow/km^2):	0.0579
Land Cultivated for Vegetable Crops:	0.159%

The distance and direction to the RMEI were identified in the Smith Ranch – Highland license application (PRI 2003) as:

> … the Sundquist (Smith) Ranch located approximately 2.6 miles southwest of the Smith Ranch Main Office/CPP site, the Vollman Ranch well located approximately 1.5 miles east of Satellite No. 3 and the Fowler Ranch well located just north of the permit area approximately 2.5 miles north of the Highland Central Plant. [PRI 2003, page 2-3]

Notice, that the Table 20 SECPOP estimate places the nearest individual to Smith Ranch – Highland at a distance of 5 to 10 km in the East direction. This location was found through analysis using CAP88 to be the location of the RMEI. To calculate the RMEI dose and risk for this study, the Table 20 RMEI distance and direction were used.

2.4.2 Meteorology

The CAP88 computer program is provided with a weather library of meteorological data from over 350 NWS stations. For the Smith Ranch – Highland site, the CAP88-provided weather data for Casper, WY (CAP88 File: CPR0335.WND) were used. The period of record for this data included the years 1967 through 1971. Table 21 shows the directional dependent average wind speed for each stability class, while Table 22 gives the stability class frequency used in the Smith Ranch – Highland analysis.

Table 21: Smith Ranch – Highland Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	1.372	2.360	3.774	5.971	3.088	1.804	0.000
NNW	1.855	2.243	3.408	4.058	3.145	1.862	0.000
NW	1.972	2.493	3.522	4.613	3.354	2.059	0.000
WNW	1.991	2.361	3.922	5.109	3.762	1.924	0.000
W	1.585	2.354	3.613	5.489	3.668	2.019	0.000
WSW	1.178	2.558	3.731	4.958	3.653	2.147	0.000
SW	1.991	2.901	3.740	5.331	3.461	2.056	0.000
SSW	1.725	2.656	3.756	5.648	3.423	2.160	0.000
S	1.972	2.687	3.938	5.565	3.384	1.943	0.000
SSE	1.991	2.699	4.561	4.794	3.367	2.064	0.000
SE	0.772	3.216	3.909	6.086	3.344	2.104	0.000
ESE	1.972	2.827	4.075	6.414	3.521	2.041	0.000
E	1.837	2.846	4.651	6.724	3.865	2.010	0.000
ENE	1.725	2.973	4.670	7.288	4.105	2.073	0.000
NE	1.178	2.691	5.089	8.261	4.040	1.959	0.000
NNE	1.672	2.809	4.477	8.494	3.971	1.924	0.000

Table 22: Smith Ranch – Highland Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0093	0.1614	0.1547	0.4633	0.0849	0.1264	0.0000
NNW	0.0904	0.1825	0.1474	0.3184	0.1325	0.1289	0.0000
NW	0.0115	0.1378	0.1499	0.4327	0.1466	0.1214	0.0000
WNW	0.0109	0.0631	0.1201	0.5322	0.1641	0.1095	0.0000
W	0.0067	0.0608	0.1044	0.5708	0.1438	0.1135	0.0000
WSW	0.0092	0.0366	0.0886	0.5864	0.1417	0.1376	0.0000
SW	0.0072	0.0404	0.0644	0.6413	0.1314	0.1152	0.0000
SSW	0.0084	0.0388	0.0585	0.6700	0.1046	0.1197	0.0000
S	0.0037	0.0385	0.0691	0.5697	0.1331	0.1860	0.0000
SSE	0.0084	0.0694	0.0792	0.4323	0.1598	0.2509	0.0000
SE	0.0061	0.0442	0.0914	0.4621	0.1687	0.2275	0.0000
ESE	0.0109	0.0439	0.0937	0.4982	0.1641	0.1892	0.0000
E	0.0081	0.0372	0.0843	0.4802	0.2302	0.1600	0.0000
ENE	0.0031	0.0175	0.0636	0.6527	0.1984	0.0647	0.0000
NE	0.0017	0.0165	0.0400	0.8454	0.0730	0.0233	0.0000
NNE	0.0044	0.0224	0.0438	0.8422	0.0546	0.0327	0.0000
TOTAL	0.0066	0.0389	0.0717	0.6385	0.1394	0.1049	0.0000

2.4.3 Radon Release

Tables 3 and 4 of Savignac 2007 provide the data necessary to use NUREG-1569 (NRC 2003), Appendix D to calculate the radon released from the various Smith Ranch – Highland well fields during both production and restoration, respectively. Using the Savignac 2007 data, Table 23 presents the calculated well field annual radon releases during both production and restoration. The reason that the annual restoration radon release is greater than the production release for all the well fields, except well field SW, is because the restoration purge rate is greater. Thus, there is less time for radiological decay to reduce the amount of radon prior to its release.

Table 23: Smith Ranch – Highland Well Field Annual Radon Release

Well Field	Radon Release (Ci/yr)						
	Production				Restoration		
	Purge	Vent	IX	Total	Purge	Vent	Total
C	19	1,544	2.3	1,565	157	1,537	1,694
D	6	257	2.3	266	26	256	282
Dext	4	772	2.3	779	79	768	848
E	2	1,011	2.3	1,016	103	1,006	1,109
F	8	4,230	2.3	4,241	455	4,207	4,662
H	1	2,207	2.3	2,210	225	2,195	2,420
I	28	2,206	2.3	2,236	225	2,195	2,420
1	185	983	8.7	1,177	794	952	1,745
2	126	674	3.4	803	217	669	886
3	237	1,275	6.9	1,518	806	1,245	2,051
4/4A	185	1,001	8.2	1,195	334	994	1,328
(SR)15	62	2,572	2.3	2,636	239	2,562	2,801
(SR)15A	58	2,388	2.2	2,448	206	2,380	2,586
(HUP)J	40	2,389	2.2	2,431	245	2,378	2,624
(HUP)K	41	844	2.4	887	94	841	935
SW	4,727	3,615	1.1	8,343	311	3,846	4,157

Cameco 2009 presents a revised estimated schedule for Smith Ranch – Highland well field activities, which has been reproduced below as Figure 6.

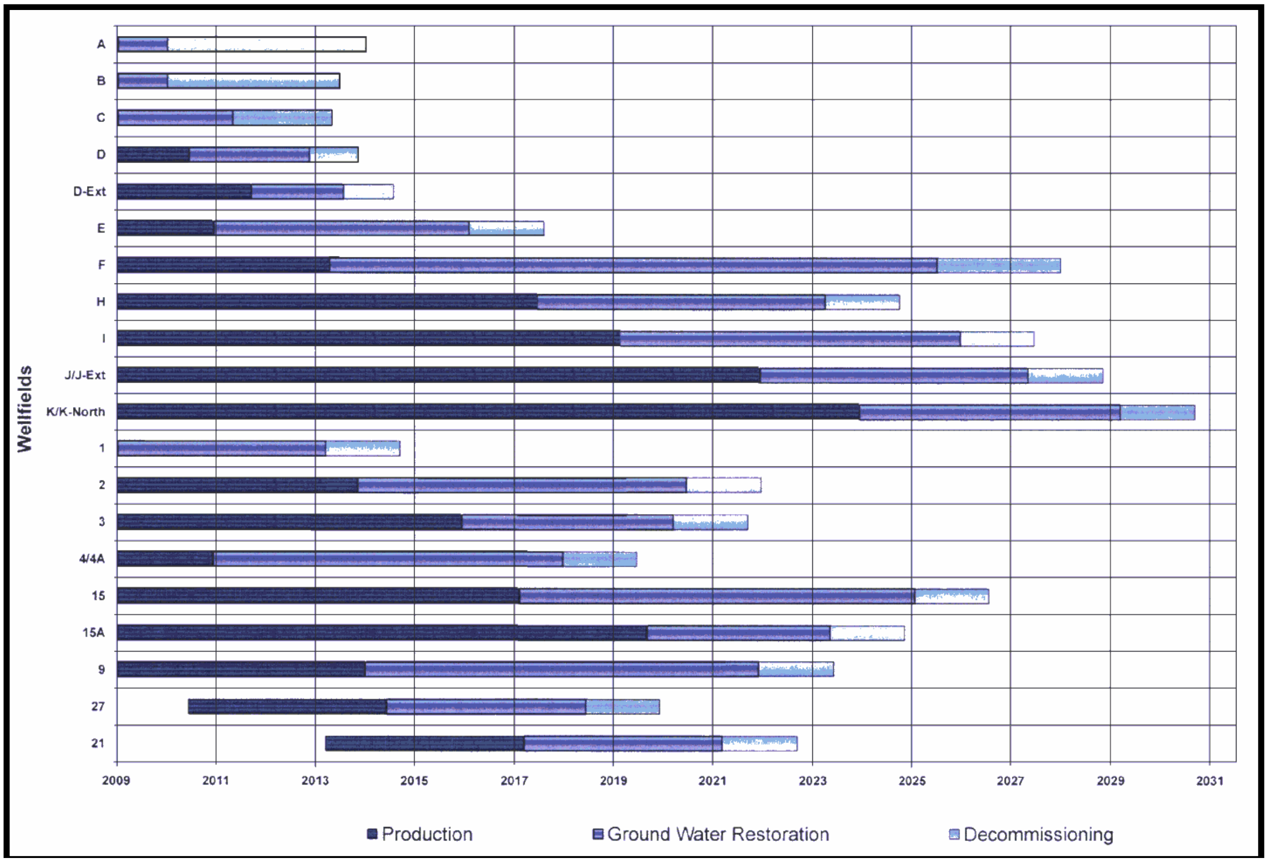

Figure 6: Smith Ranch – Highland – Estimated Time Table of Mining Related Activities

Figure 6 is used in conjunction with Table 23 to calculate the site-wide annual radon release over the Smith Ranch – Highlands estimated operating life. Figure 7 shows these calculated Smith Ranch – Highland radon releases.

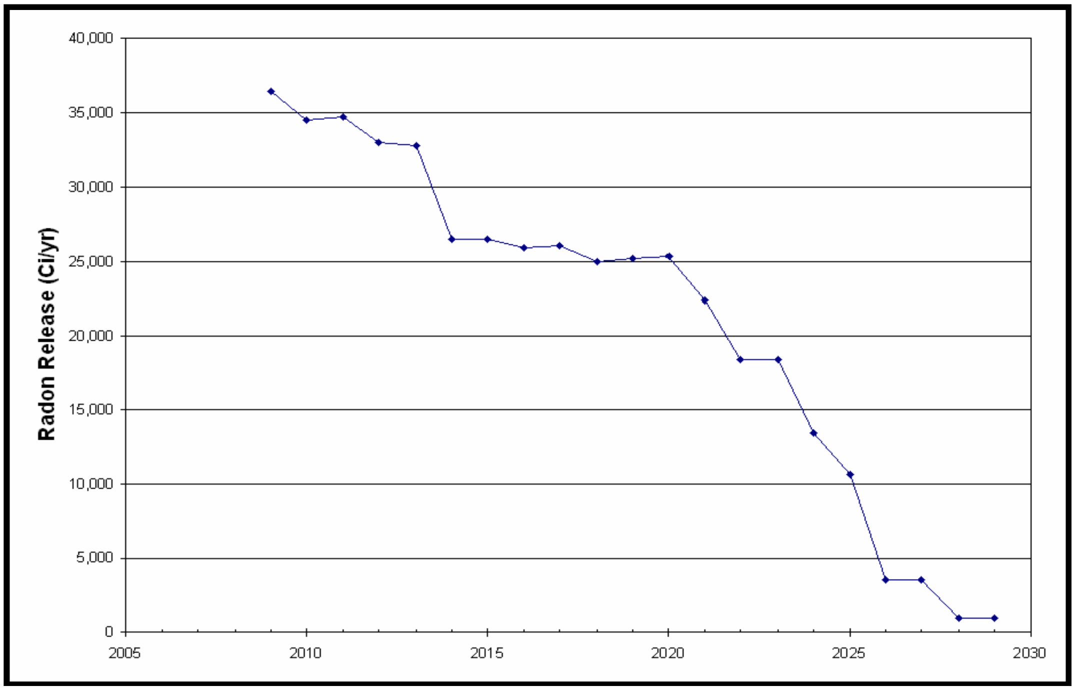

Figure 7: Smith Ranch – Highland – Total Estimated Radon Release by Year

The calculated maximum Smith Ranch – Highland annual radon release from all well fields either in production or restoration occurs in 2009 and is 36,500 Ci, while the average annual radon release from 2009 to 2029 is 21,100 Ci.

2.4.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Smith Ranch – Highland site are shown in Table 24.

Table 24: Smith Ranch – Highland Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	**Maximum**	**Average**
		1	36,500	21,100
RMEI (7500m E)	Dose (mrem/yr)	7.2E-04	1.5E+00	8.6E-01
	LCF Risk (yr^{-1})	3.7E-10	7.7E-07	4.5E-07
Population	Dose (person-rem/yr)	1.8E-03	3.7E+00	2.2E+00
	LCF Risk (yr^{-1})	1.1E-08	2.3E-05	1.3E-05

2.5 Crow Butte[5]

The Crow Butte Project site is located in west central Dawes County, Nebraska, just north and west of the Pine Ridge Area. The Crow Butte Project site, shown in Figure 8, is about 4.0 miles southeast of the City of Crawford via Squaw Creek Road. What is now the Crow Butte Project was originally developed by Wyoming Fuel Corporation, which constructed a R&D facility at the site in 1986; commercial operations began in 1991. The project was subsequently acquired and is now owned and operated by Crow Butte Resources, Inc. (CBR), known as the Ferret Exploration Company of Nebraska until May 1994. It is the first uranium mine in Nebraska and has reserves of 5.9 million pounds of U_3O_8 (2,270 tonnes U), resources of 8.5 million pounds of U_3O_8 (3,270 tonnes U), and an annual capacity of 2 million pounds of U_3O_8.

Figure 8: Crow Butte – Aerial View

Most of the following description of the Crow Butte ISL process was taken from the license renewal application (CBR 2007). Uranium is recovered by ISL from the Chadron Sandstone at a depth that varies from 400 feet to 900 feet. The overall width of the mineralized area varies from 1000 feet to 5000 feet. The ore body ranges from less than 0.05 percent to greater than 0.5 percent U_3O_8, with an average grade estimated at 0.26 percent equivalent U_3O_8. The ISL process at Crow Butte uses gaseous oxygen or hydrogen peroxide to oxidize the uranium, and bicarbonate for dissolution. The uranium-bearing solution that results from the leaching of uranium underground is recovered from the well field and the uranium is extracted in the process plant. The plant process consists of the following steps:

- Loading of uranium complexes onto ion exchange resin;
- Reconstitution of the solution by the addition of carbonate and an oxidizer;

[5] The description of the Crow Butte site was abstracted from various sources, including CBR 2007, Melbye 2008, CBR 2009, and Cameco 2010a, while the aerial view of the Crow Butte site was obtained from Google Maps.

- Elution of the uranium complexes from the resin; and
- Drying and packaging of the uranium.

The radon-222 is contained in the pregnant lixiviant that comes from the well field to the process plant. The majority of this radon is released in the ion exchange columns and process tanks. These vessels are covered and vented to a manifold, which are in turn exhausted to atmosphere outside the building through stacks.

2.5.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Crow Butte site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 25. To adjust the 2000 population data to 2010, the CAP88 Crow Butte population dose was multiplied by 0.96, see Section 1.2 and Table 3.

Table 25: Crow Butte Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	19	20
NNW	0	0	0	1	0	34	39
NW	0	0	0	1	0	1140	33
WNW	0	0	4	0	0	20	12
W	0	3	0	0	0	24	20
WSW	0	2	0	5	0	7	21
SW	0	0	0	6	0	0	25
SSW	0	0	0	0	1	10	18
S	0	0	0	0	0	0	41
SSE	0	0	0	0	12	0	22
SE	0	0	0	0	0	10	12
ESE	0	1	0	0	0	0	43
E	0	0	0	0	0	0	6
ENE	0	0	0	15	0	9	32
NE	0	0	0	0	0	7	42
NNE	0	0	0	0	0	5	147

Table 25: Crow Butte Population Data

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	0	3	22	88	187	232
NNW	3	7	13	22	37	80
NW	26	24	4	23	0	51
WNW	25	35	22	22	28	37
W	27	26	295	35	72	25
WSW	22	8	9	29	35	34
SW	13	7	46	14	14	26
SSW	17	14	22	12	88	355
S	29	42	40	34	8	239
SSE	37	80	1148	209	268	5496
SE	14	94	134	182	495	3841
ESE	43	60	35	178	131	70
E	70	263	101	889	162	1193
ENE	203	598	101	86	109	3858
NE	59	5588	55	29	166	1904
NNE	1	17	11	17	81	103

The agricultural productivity factors for Nebraska were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Crow Butte site population dose calculation.

Beef Cattle Density (cattle/km^2):	35.
Milk Cattle Density (cow/km^2):	0.878
Land Cultivated for Vegetable Crops:	2.39%

The distance and direction to the RMEI were identified in the CBR's response to NRC's request for additional information (RAI) (CBR 2009) regarding the Crow Butte license renewal application as:

> Two dwelling units are within 0.62 mile [ENE and ESE], and another five dwelling units are within 1.24 miles of the center point of the License Area. [CBR 2009, Section 2.2.3.4]

Notice that the Table 25 SECPOP estimate places the nearest individuals to Crow Butte at a distance of 1 to 2 km in the West, WSW, and ESE directions. Through analysis using CAP88 the RMEI was found to be located 1 to 2 km in the WSW direction. To calculate the RMEI dose and risk for this study, the Table 25 RMEI distances and directions were used, since they are consistent with the RAI response information (i.e., 0.62 mile is equal to 1 km in the ESE direction, and 1.24 miles is about 2 km).

2.5.2 Meteorology

The Crow Butte ISL site has a meteorological monitoring station that records wind speed, wind direction, and stability class. This onsite meteorological data were used by CBR to formulate a joint frequency distribution for the dose calculations performed as part of the Crow Butte license renewal application. For this risk assessment, the meteorological data from the license renewal application were reformatted so that it could be processed by the CAP88 auxiliary program, WINDGET (Trinity 2007), which generated a meteorological data file in the format required by CAP88 (i.e., a .WND file). Table 26 shows the directional-dependent average wind speed for each stability class that was used in this risk assessment for the Crow Butte site, while Table 27 gives the stability class frequency.

Table 26: Crow Butte Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	3.702	5.309	5.269	8.323	3.824	2.504	0.000
NNW	4.259	5.031	7.395	7.497	3.340	2.364	0.000
NW	3.890	5.313	6.946	6.680	3.971	2.243	0.000
WNW	3.251	4.099	6.033	5.610	3.801	1.897	0.000
W	3.208	4.558	6.026	6.968	3.559	1.643	0.000
WSW	3.400	4.658	6.596	6.267	3.786	1.869	0.000
SW	3.381	4.672	6.051	6.886	3.936	2.446	0.000
SSW	3.594	4.399	5.726	7.469	3.882	2.095	0.000
S	3.844	5.053	5.848	6.572	3.401	1.826	0.000
SSE	3.898	5.988	5.852	8.053	3.356	1.682	0.000
SE	4.106	5.996	5.821	9.384	4.293	2.160	0.000
ESE	4.322	4.833	5.447	8.553	4.029	2.311	0.000
E	4.296	5.217	5.643	8.225	3.246	2.105	0.000
ENE	4.024	5.198	4.985	7.496	4.094	2.192	0.000
NE	3.804	4.493	5.118	6.580	4.179	2.347	0.000
NNE	4.550	4.719	4.820	7.136	3.594	2.568	0.000

Table 27: Crow Butte Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0229	0.0336	0.0608	0.5833	0.1758	0.1236	0.0000
NNW	0.0349	0.0462	0.0908	0.5105	0.2089	0.1087	0.0000
NW	0.0885	0.1017	0.1610	0.3487	0.1788	0.1213	0.0000
WNW	0.0605	0.1256	0.1596	0.2897	0.1589	0.2058	0.0000
W	0.1169	0.0716	0.4700	0.1658	0.0878	0.0879	0.0000
WSW	0.1062	0.1419	0.2329	0.3233	0.1250	0.0708	0.0000
SW	0.0833	0.1149	0.1570	0.4925	0.1229	0.0294	0.0000
SSW	0.1098	0.0898	0.1157	0.5296	0.1157	0.0395	0.0000
S	0.1463	0.1528	0.1463	0.3110	0.1425	0.1010	0.0000
SSE	0.0825	0.1194	0.1369	0.5582	0.0695	0.0335	0.0000
SE	0.0332	0.0615	0.0780	0.7436	0.0521	0.0315	0.0000
ESE	0.0677	0.1026	0.0720	0.5913	0.1089	0.0574	0.0000
E	0.0823	0.1161	0.1263	0.4623	0.1055	0.1075	0.0000
ENE	0.0372	0.0696	0.1450	0.5163	0.1518	0.0801	0.0000
NE	0.0281	0.0439	0.0930	0.5189	0.1994	0.1166	0.0000
NNE	0.0244	0.0400	0.0874	0.4574	0.2123	0.1785	0.0000
TOTAL	0.0559	0.0730	0.1152	0.5100	0.1510	0.0948	0.0000

2.5.3 Radon Release

Regarding radon release from the Crow Butte site, the application for license renewal (CBR 2007) stated:

> The only radioactive airborne effluent at the Crow Butte Project is radon-222 gas. As yellowcake drying and packaging is carried out using a vacuum dryer, there are no airborne effluents from that system.
>
> The radon-222 is contained in the pregnant lixiviant that comes from the wellfield to the process plant. The majority of this radon is released in the ion exchange columns and process tanks. These vessels are covered and vented to a manifold, which are in turn exhausted to atmosphere outside the building through stacks. The manifolds are equipped with an exhausting fan. [CBR 2007, Section 1.8.1]

As required by 10 CFR § 40.65 and License SUA-1534 Condition Number 12.1, the estimated release of radon from process operations is reported in the semi-annual reports. Table 28 contains annual calculated radon releases from the Crow Butte Project Facility since 1994, as does Figure 9.

Table 28: Crow Butte Radon Release to the Environment

Year	Release (Ci/yr)	Year	Release (Ci/yr)
1995	3,537	2001	4,633
1996	3,997	2002	4,675
1997	4,175	2003	4,615
1998	4,740	2004	4,671
1999	4,674	2005	4,517
2000	4,760	2006	4,607

Source: CBR 2009, Table 5.8-8

Table 29: Crow Butte Modeled Radon Release

Source	Release (Ci/yr)
Plant Vent	4,603
Satellite Plant Vent	342
MU-2-4 (restoration)	350
MU-5	454
MU-6&8	908
MU 7&9	908
North Trend Well Field	1,320
Total	8,885

Source: CBR 2007, Table 7.12-5

CBR 2007 used MILDOS-Area to model the emission rate of radon from the Crow Butte Project, including the North Trend Well Field. Those modeled radon emission rates are shown in Table 29, which consists of a flow of 5000 gpm in the up-flow ion exchange columns in the existing plant, along with the proposed 4000 gpm of flow treated in the pressurized down-flow ion exchange columns. Notice that the modeled radon release rate is about twice as that reported as the estimated radon release rate.

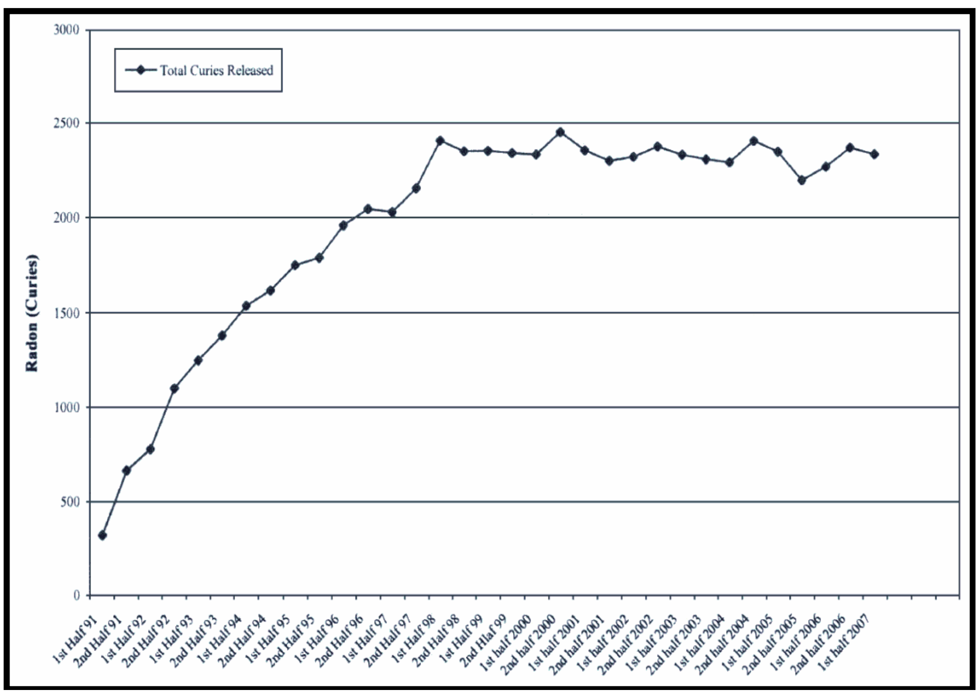

Figure 9: Crow Butte Total Estimated Semi-Annual Radon Release (1991-2007)

For the Crow Butte Project, the maximum annual radon release rate was assumed to be 8,885 Ci, while the average annual release rate is 4,467 Ci.

2.5.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Crow Butte site are shown in Table 30.

Table 30: Crow Butte Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	8,885	4,467
RMEI (1500m WSW)	Dose (mrem/yr)	1.6E-03	3.3E+00	1.9E+00
	LCF Risk (yr^{-1})	8.4E-10	1.7E-06	1.0E-06
Population	Dose (person-rem/yr)	1.3E-03	2.7E+00	1.6E+00
	LCF Risk (yr^{-1})	8.4E-09	1.7E-05	1.0E-05

2.6 Christensen / Irigaray[6]

The Christensen / Irigaray Ranch project is an ISL uranium mining operation located approximately 55 miles southeast of Buffalo, Wyoming, and 51 miles northeast of Midwest, Wyoming. The project is actually composed of two ISL sites (7 miles apart) containing well fields or facilities within approximately 687 acres. The first area, generally referred to as the Irigaray site or the Irigaray CPP, is located in southeast Johnson County, Wyoming (see Figure 10). The uranium deposit is one of many located in the Powder River Basin in northeast Wyoming. The property consists of approximately twenty-eight square miles. The second area is the Christensen Ranch well field and satellite operation (ion exchange plant), shown in Figure 11, which is located approximately 13 miles southeast of the Irigaray site. The Christensen Ranch operations consist of approximately 14,000 acres in Johnson and Campbell Counties, Wyoming.

In August 1978, the NRC issued one license, SUA-1341, which covers both areas of the Christensen / Irigaray Ranch project. The site operated intermittently until June 2000, when all mining activities were suspended due to low uranium prices. In April 2007, the mine owner, Cogema Mining, Inc., requested an amendment to the license to return the facility to an operating status. The NRC subsequently approved the licensee's request by a license amendment dated September 30, 2008. In December 2009, Cogema Mining was sold to Uranium One, Inc.

In anticipation of plant startup, the licensee began implementing operations-related environmental monitoring during October 2008. When the plant resumes operation, the first mine unit that will be placed into service will be Christensen Ranch mine unit 7. At the time of the inspection, the well field data package for this mine unit was being reviewed by the State of Wyoming. The construction of the mine unit was approximately half complete. The monitor

[6] The description of the Christensen / Irigaray site was abstracted from various sources, including Melbye 2008, NRC 2008, and NRC 2010, while the aerial views of the Christensen / Irigaray site were obtained from Google Maps.

well ring and some of the main trunk lines had been installed. In the near future, the licensee plans to develop Christensen Ranch mine units 8-9. Future well fields may include Christensen Ranch mine units 10-12.

Since the site was returned to operational status September 30, 2008, with the intent of returning to uranium production, plans to decommission the CPP at Irigaray were stopped, and, instead, the plant will be refurbished for a return to operation. Surface reclamation of the well fields at Irigaray will continue, as there is no intent to reopen them for production. The satellite processing plant at Christensen Ranch will be used for operations, as uranium production has not occurred at several permitted well fields at Christensen Ranch. The Irigaray CPP may also be used for final processing of uranium from the Moore Ranch and Uranium One's other uranium projects in the Powder River Basin.

Figure 10: Irigaray – Aerial View

Figure 11: Christensen – Aerial View

2.6.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Christensen / Irigaray site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 31. To adjust the 2000 population data to 2010, the CAP88 Christensen / Irigaray population dose was multiplied by 1.34, see Section 1.2 and Table 3.

Table 31: Christensen / Irigaray Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	6
WNW	0	0	0	0	0	0	7
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	30
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSE	0	0	0	0	0	1	10
SE	0	0	0	1	0	0	0
ESE	0	0	0	0	0	3	5
E	0	0	0	0	0	0	1
ENE	0	0	0	0	0	0	7
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	7

Table 31: Christensen / Irigaray Population Data

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	0	0	12	18	17	8
NNW	0	0	3	5	24	16
NW	0	0	0	26	151	2135
WNW	0	0	0	16	36	34
W	0	24	109	39	23	27
WSW	54	24	277	55	19	13
SW	4	0	11	0	21	8
SSW	34	3	600	2	13	0
S	14	4	0	3	8	0
SSE	2	0	20	5	4	25
SE	0	8	29	9	17	14
ESE	13	7	77	7	5	49
E	3	0	1417	91	20	8
ENE	31	2	39	52	16	28
NE	38	11	150	459	23517	5049
NNE	0	8	66	407	403	118

The agricultural productivity factors for Wyoming were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Christensen / Irigaray site population dose calculation.

Beef Cattle Density (cattle/km^2):	5.12
Milk Cattle Density (cow/km^2):	0.0579
Land Cultivated for Vegetable Crops:	0.159%

The distance and direction to the RMEI were identified in Cogema's response to NRC's RAI (Cogema 2010) regarding the Christensen / Irigaray license renewal application as:

> The nearest residence to the IR site is 4 miles to the north (the Brubaker ranch) and the nearest residence to CR is the John Christensen ranch located 3 miles southeast of the CR plant site. Both are ranch housing with a population of 5 or less. [Cogema 2010, Section 5.2]

Notice that the Table 31 SECPOP estimate places the nearest individual to Christensen / Irigaray at a distance of 3 to 4 km in the SE direction. This location was found to be the location of the RMEI through analysis using CAP88. Since it is slightly closer, the Table 31 RMEI distance and direction were used to calculate the RMEI dose and risk for this study.

2.6.2 Meteorology

The CAP88 computer program is provided with a weather library of meteorological data from over 350 NWS stations. For the Christensen / Irigaray site, the CAP88-provided weather data for Casper, WY (CAP88 File: 24089.WND) were used. The period of record for this data included the years 1988 through 1992. Table 32 shows the directional-dependent average wind speed for each stability class, while Table 33 gives the stability class frequency, used in the Christensen / Irigaray analysis.

Table 32: Christensen / Irigaray Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	2.070	2.820	4.040	5.620	3.160	1.960	0.000
NNW	2.080	2.760	3.260	4.620	3.160	1.920	0.000
NW	1.990	2.920	3.340	4.670	3.160	1.820	0.000
WNW	2.210	2.650	4.080	5.340	3.580	2.150	0.000
W	1.940	2.680	4.100	5.730	3.780	2.080	0.000
WSW	2.070	3.020	4.050	5.110	3.520	2.120	0.000
SW	1.930	2.990	3.830	5.190	3.410	2.170	0.000
SSW	2.060	2.870	3.750	5.830	3.520	2.180	0.000
S	1.770	2.900	3.970	5.510	3.450	2.150	0.000
SSE	2.190	2.520	3.530	5.120	3.270	2.150	0.000
SE	2.270	3.030	4.100	5.560	3.470	2.200	0.000
ESE	2.070	3.110	4.560	6.220	3.450	2.190	0.000
E	2.020	2.890	4.720	6.500	3.820	2.150	0.000
ENE	1.970	3.100	5.200	7.080	4.100	2.200	0.000
NE	2.170	2.980	5.500	8.420	4.010	2.210	0.000
NNE	1.970	2.990	5.000	8.290	3.740	2.110	0.000

Table 33: Christensen / Irigaray Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0135	0.2097	0.1742	0.3958	0.0973	0.1095	0.0000
NNW	0.0276	0.2452	0.2063	0.2690	0.1188	0.1331	0.0000
NW	0.0302	0.1927	0.2094	0.3469	0.1073	0.1134	0.0000
WNW	0.0083	0.1102	0.1352	0.4937	0.1515	0.1010	0.0000
W	0.0036	0.0671	0.1110	0.5846	0.1395	0.0943	0.0000
WSW	0.0088	0.0549	0.0995	0.5699	0.1414	0.1254	0.0000
SW	0.0061	0.0557	0.0861	0.5939	0.1350	0.1232	0.0000
SSW	0.0056	0.0431	0.0616	0.6628	0.1138	0.1130	0.0000
S	0.0061	0.0469	0.0886	0.5403	0.1474	0.1707	0.0000
SSE	0.0046	0.0541	0.0913	0.3999	0.2038	0.2462	0.0000
SE	0.0015	0.0535	0.0963	0.4190	0.1955	0.2343	0.0000
ESE	0.0063	0.0391	0.1045	0.4612	0.1511	0.2379	0.0000
E	0.0028	0.0336	0.0921	0.4964	0.2166	0.1586	0.0000
ENE	0.0013	0.0178	0.0720	0.6031	0.2275	0.0783	0.0000
NE	0.0008	0.0099	0.0444	0.8381	0.0813	0.0254	0.0000
NNE	0.0028	0.0318	0.0732	0.7946	0.0614	0.0361	0.0000
TOTAL	0.0041	0.0424	0.0820	0.6227	0.1437	0.1051	0.0000

2.6.3 Radon Release

Table 34 presents annual calculated radon release estimates for the Christensen / Irigaray site for the period 1995 to 2000, the last production run prior to entering exclusively into restoration. Table 34 summarizes the information presented in the semi-annual effluent reports over that time period. Calculation of the semi-annual radon release was suspended after year 2000 (Cogema 2008).

The source terms used to estimate radon-222 releases from the facility include two well fields in production, two restoration well fields, one new well field, and the satellite processing facility. The radon-222 releases from these source terms are calculated using methods similar to those described in NUREG-1569, Appendix D. For the Christensen Ranch area, mine units 10-12 and 7 were chosen based on their proximity to site boundaries and predominant wind directions. A summary of estimated radon-222 releases from the Facility is presented in Table 35.

Table 34: Christensen / Irigaray Environmental Radon Release Summary

Year	Radon Release (Ci/yr)	
	Irigaray	Christensen Ranch
1995	58.5	739.8
1996	63.9	1125.1
1997	71.0	1231.7
1998	69.6	1384.4
1999	132.8	711.4
2000	214.5	434.0

Source: Cogema 2008, Table 5.13

Table 35: Christensen / Irigaray Estimated Radon Release

Source	Release (Ci/yr)
Production	281
Restoration	257
Drilling	0.04
Resin Transfer	0.42
Total	538.46

Source: Cogema 2008, Table 7.3-2

For the Christensen / Irigaray site, the maximum annual radon release rate was assumed to be 1,600 Ci, while the average annual release rate is 1,040 Ci.

2.6.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Christensen / Irigaray site are shown in Table 36.

Table 36: Christensen / Irigaray Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	1,600	1,040
RMEI (3500m SE)	Dose (mrem/yr)	9.1E-04	1.9E+00	1.1E+00
	LCF Risk (yr^{-1})	4.8E-10	9.9E-07	5.7E-07
Population	Dose (person-rem/yr)	1.8E-03	3.8E+00	2.2E+00
	LCF Risk (yr^{-1})	1.2E-08	2.4E-05	1.4E-05

2.7 Alta Mesa 1,2,3[7]

The Alta Mesa Project uranium deposits, located in southern Brooks County, Texas, were discovered in the mid-1970s, and some exploration drilling and monitor well installation were started in the 80s and early 90s. However, due to low uranium prices, the project was not developed. When Uranium Resources Inc. began licensing the Alta Mesa Project, the Texas Natural Resource Conservation Commission (TNRCC) was the regulatory agency. In 1998, Uranium Resources Inc. received permit number UR03060 from the TNRCC. Due to the depressed uranium market, URI abandoned the project in 1999, which was then continued by Mesteña Uranium LLC. Licensing and permitting effort proceeded to 2002. In 2002, the Texas Department of Health, Bureau of Radiation Control issued material license number L05360 for the operation of the Alta Mesa in situ uranium mine to Mesteña Uranium. Development activities began in late 2004, and construction of the production facilities began in January 2005. Despite challenges due to three hurricanes, and short supplies of materials, equipment, and trained personnel, the Alta Mesa Project started, as planned, in October 2005. The Alta Mesa Project produced 480,000 lbs of U_3O_8 in 2009, and plans to produce about 650,000 lbs of U_3O_8 in 2010.

In 2007, the responsibility for source material recovery (i.e., uranium surface mining activities) licensing was transferred to the Texas Department of State Health Services (TDSHS) to the Texas Commission on Environmental Quality (TCEQ). The Texas Railroad Commission (TRRC) retains responsibility for permitting for exploration wells for uranium mining.

The uranium mineralization occurs at depths from 150 to 500+ feet deep in different sandstone units of the Pliocene Goliad Formation, with an average thickness of 14.3 feet. The majority of the mineable reserves as of 1994 had been found in a sandstone unit designated the Middle C Sand Unit, with ore quality mineralization ranging from 420 to 480 feet deep. The uranium occurs along multiple, relatively continuous oxidation-reduction fronts that range in width from 50 to 200+ feet wide. The Alta Mesa uranium deposit has an average ore grade of 0.096% U_3O_8. The Alta Mesa Project, shown in Figure 12, uses conventional ion exchange precipitation processes and a low-temperature, zero-emission rotary vacuum dryer. The facility and well fields are designed for flexibility of operations.

[7] The description of the Alta Mesa site was abstracted from various sources, including Tanner and Goranson 2007, Melbye 2008, and McNeill 2010, while the aerial view of the Alta Mesa site was obtained from Google Maps.

Figure 12: Alta Mesa – Aerial View

2.7.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Alta Mesa site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 37. To adjust the 2000 population data to 2010, the CAP88 Alta Mesa population dose was multiplied by 0.92, see Section 1.2 and Table 3.

Table 37: Alta Mesa 1,2,3 Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	2	0
NNW	0	0	6	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	6	0	0	0	0
WSW	0	0	0	0	0	0	9
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	51
S	0	0	0	0	0	10	38
SSE	0	0	0	0	0	0	0
SE	0	0	0	0	0	41	0
ESE	0	0	0	0	0	14	0
E	0	0	69	0	0	79	198
ENE	0	0	0	0	0	6	112
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	11	17	197	577	184	2454
NNW	6	0	73	106	309	41
NW	7	13	0	4748	339	482
WNW	0	14	5	25	28	30
W	22	3	0	26	16	84
WSW	0	114	21	44	78	19
SW	239	149	155	47	502	20610
SSW	462	13	38	33	2458	17761
S	81	56	103	2305	65220	201974
SSE	3	56	1058	6732	41029	66913
SE	25	60	34	69	7733	9454
ESE	6	0	0	65	26	404
E	18	0	8	48	0	0
ENE	18	4	3	8	8	24
NE	3	42	201	36	1542	5971
NNE	5	4518	2862	3377	48	3089

The agricultural productivity factors for Texas were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Alta Mesa site population dose calculation.

Beef Cattle Density (cattle/km^2):	19
Milk Cattle Density (cow/km^2):	0.53
Land Cultivated for Vegetable Crops:	0.577%

According to Mestena 2000, Table 3.2, the nearest resident to the Alta Mesa site is located about 2.5 km in the WSW direction. Table 37 also shows the nearest resident as being 2 to 3 km from the site, but in the NNW, West, and East directions. Through analysis using CAP88, the RMEI was identified to be located 2 to 3 km in the NNW direction.

2.7.2 Meteorology

The U.S. Naval Air Base in Kingsville, which is much closer to the site than any of the NWS stations (45miles northeast), collects meteorological data, including wind speed, wind direction, and stability class. Meteorological data from the Kingsville Naval Air Base were used by Mestena Uranium to formulate a joint frequency distribution for the dose calculations performed as part of the Alta Mesa license application. For this risk assessment, the meteorological data from the Alta Mesa license application were reformatted so that they could be processed by the CAP88 auxiliary program, WINDGET (Trinity 2007), which generated a meteorological data file in the format required by CAP88 (i.e., a .WND file). Table 38 shows the directional-dependent average wind speed for each stability class that was used in this risk assessment for the Alta Mesa site, while Table 39 gives the stability class frequency.

Table 38: Alta Mesa / Kingsville Dome Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	2.012	3.266	5.985	7.300	4.983	2.017	0.000
NNW	1.743	3.518	5.521	7.872	5.115	2.003	0.000
NW	2.000	3.566	6.077	7.482	5.107	1.975	0.000
WNW	1.823	3.648	5.834	7.200	4.799	1.659	0.000
W	1.680	2.995	5.338	5.648	4.244	1.533	0.000
WSW	1.488	2.699	4.844	5.468	3.866	1.341	0.000
SW	1.439	2.713	4.849	5.512	4.025	1.601	0.000
SSW	1.300	2.720	4.888	6.149	4.340	1.624	0.000
S	2.208	2.618	4.761	6.445	4.705	1.633	0.000
SSE	1.826	2.395	5.180	6.390	4.763	1.659	0.000
SE	2.556	2.373	5.205	6.202	4.782	1.642	0.000
ESE	2.556	2.924	4.545	6.220	4.388	1.695	0.000
E	1.027	1.982	4.278	4.734	4.203	1.542	0.000
ENE	1.029	1.762	3.991	3.652	6.112	1.462	0.000
NE	1.826	3.573	4.278	5.487	3.962	1.344	0.000
NNE	1.814	2.600	5.346	6.672	4.431	1.945	0.000

Table 39: Alta Mesa / Kingsville Dome Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0162	0.0700	0.1047	0.4226	0.1090	0.2775	0.0000
NNW	0.0146	0.0529	0.0762	0.4792	0.1186	0.2585	0.0000
NW	0.0091	0.0354	0.0771	0.4761	0.1313	0.2710	0.0000
WNW	0.0060	0.0474	0.1093	0.4900	0.0947	0.2526	0.0000
W	0.0201	0.0745	0.1079	0.3680	0.0769	0.3526	0.0000
WSW	0.0176	0.0876	0.1120	0.4117	0.0694	0.3017	0.0000
SW	0.0092	0.0676	0.1025	0.5021	0.0816	0.2370	0.0000
SSW	0.0085	0.0756	0.1033	0.5325	0.0657	0.2144	0.0000
S	0.0084	0.0471	0.0879	0.5084	0.0913	0.2568	0.0000
SSE	0.0040	0.0493	0.0830	0.4447	0.0741	0.3448	0.0000
SE	0.0045	0.0523	0.0751	0.3448	0.0726	0.4507	0.0000
ESE	0.0081	0.0724	0.1158	0.2966	0.0553	0.4517	0.0000
E	0.0242	0.1773	0.0492	0.1892	0.0375	0.5226	0.0000
ENE	0.0244	0.1323	0.0997	0.1670	0.0082	0.5683	0.0000
NE	0.0189	0.1679	0.1463	0.3258	0.0619	0.2792	0.0000
NNE	0.0389	0.1298	0.1531	0.3888	0.0518	0.2377	0.0000
TOTAL	0.0121	0.0617	0.0949	0.4520	0.0945	0.2848	0.0000

2.7.3 Radon Release

The only information identified regarding radon release from the Alta Mesa Project was contained within the June 2000 radiological assessment performed for the project (Mestena 2000). The following is the radiological assessment's description of the Alta Mesa radon release.

> Radon gas will be emitted at the central facility when the circulating fluids are brought into equilibrium with the ambient atmosphere. The emission points will be all open tankage, resin columns and processing equipment.
>
> Two centralized discharge areas of radon gas were modeled, one centered on the production area of the process pad (Production Pad) and one centered on the restoration area of the process pad (Restoration Pad). An additional point source for radon was modeled based on the center of the pond receiving purge water (Purge Pond).
>
> Additional radon gas will be emitted at the wellfields because of well field venting and other small releases. These sites were modeled as small area sources centered on points within each wellfield which represented a one year production element. [Mestena 2000, Appendix 1]

The Alta Mesa annual radon release, as presented in the radiological assessment (Mestena 2000), is shown in Table 40.

Table 40: Alta Mesa Annual Radon Source Term

Source	Release (Ci/yr)
Well field 1a	5.2
Well field 1b	6.05
Well field 2a	4.81
Well field 2b	5.09
Well field 3a	1.67
Well field 3b	2.5
Well field 4	2.09
Process Pad	617.5
Restoration Pad	88.35
Purge Pond	6.5
Total	739.8

Source: Mestena 2000, Attachment 1

The radon releases given in Table 40 are design basis values; and, as such, are based on the Alta Mesa uranium production capacity of 1,500,000 lbs per year. As stated above, the amount of uranium produced at Alta Mesa has been somewhat less than its production capacity. Table 41 gives the Alta Mesa annual radon release as a function of the amount of uranium produced.

Table 41: Alta Mesa Radon Release by Uranium Production

Year	Uranium Production (lbs/yr)	Radon Release (Ci/yr)
2007	956,000	471
2009	480,000	237
2010	650,000	321
Capacity	1,500,000	740

2.7.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Alta Mesa site are shown in Table 42.

Table 42: Alta Mesa Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	740	472
RMEI (2500m NNW)	Dose (mrem/yr)	5.6E-03	1.2E+01	6.7E+00
	LCF Risk (yr^{-1})	3.0E-09	6.1E-06	3.6E-06
Population	Dose (person-rem/yr)	1.0E-02	2.2E+01	1.3E+01
	LCF Risk (yr^{-1})	6.3E-08	1.3E-04	7.6E-05

2.8 Kingsville Dome 1,3[8]

Uranium Resources, Inc.'s (URI's) Kingsville Dome property consists of mineral leases from private landowners on about 2,354 acres located in central Kleberg County, Texas. An aerial view of the Kingsville Dome site is shown in Figure 13. For the Kingsville Dome site, URI holds the TNRCC's Underground Injection Control Permit: UR02827; the site is also covered by the Texas Department of Health's radioactive materials license: L06353. At Kingsville Dome, multiple satellites feed a central processing plant at a rate of 400,000 pounds of U_3O_8 (154 tonnes U) per year (targeting between 1 and 2 million pounds of U_3O_8 (385-770 tonnes U) annually). Initial production commenced in May 1988 and continued until July 1999, when depressed uranium prices led to the suspension of production. URI resumed production at Kingsville Dome in April 2006 and produced 94,100 pounds of uranium in 2006, 338,100 pounds in 2007, 254,000 pounds in 2008, and 56,000 pounds in 2009. In the second quarter of 2009, due to depressed pricing, production at Kingsville Dome was shut-down to conserve the in-place reserve base until higher prices could be realized.

Figure 13: Kingsville Dome – Aerial View

8 The description of the Kingsville Dome site was abstracted from various sources, including Melbye 2008, URI 2010a, and URI 2010b while the aerial view of the Kingsville Dome site was obtained from Google Maps.

2.8.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Kingsville Dome site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 43. To adjust the 2000 population data to 2010, the CAP88 Kingsville Dome population dose was multiplied by 0.97, see Section 1.2 and Table 3.

Table 43: Kingsville Dome 1,3 Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	54	3796
NNW	0	0	0	0	0	0	21
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	82	0	0	0	0
SW	0	0	3	0	0	87	393
SSW	0	0	0	0	0	37	189
S	0	0	0	0	0	41	248
SSE	0	0	0	0	0	240	512
SE	0	0	0	0	138	0	0
ESE	0	0	66	0	0	461	288
E	0	0	0	39	27	677	409
ENE	0	0	0	91	30	369	265
NE	0	0	0	0	0	537	18252
NNE	0	0	7	0	0	74	7920

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	1134	1242	2185	3921	2450	8983
NNW	330	1026	19092	24698	4509	14441
NW	276	296	60486	159467	14418	15036
WNW	0	77	2009	29018	305	181
W	0	0	6	0	0	0
WSW	0	0	0	0	0	0
SW	0	0	0	0	0	0
SSW	30	0	0	0	0	0
S	148	5	0	51	5	30
SSE	80	6	4	0	172	8
SE	25	613	68	8	160	235
ESE	0	1724	6133	99	26	22
E	0	2495	503	189	301	276
ENE	0	26	469	259	2036	125
NE	0	649	23849	6994	1116	52
NNE	126	302	1209	1430	3988	750

The agricultural productivity factors for Texas were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Kingsville Dome site population dose calculation.

Beef Cattle Density (cattle/km^2):	19
Milk Cattle Density (cow/km^2):	0.53
Land Cultivated for Vegetable Crops:	0.577%

According to TBRC 1988, Table S6.9-2, the nearest downwind resident to the Kingsville Dome site is located about 1.35 km in the West direction, and the nearest resident is located 0.44 km in the East direction. Table 43 also shows the nearest residents to the Kingsville Dome site as being about 2 to 3 km from the site, but in the WSW, ESE, and NNE directions. Through analysis using CAP88, the RMEI was found to be located 2 to 3 km in the NNW direction.

2.8.2 Meteorology

Because of the close proximity of the Kingsville Dome site to the Alta Mesa site (less than 50 miles) and because Kingsville Naval Air Base is the closest meteorological station to both, the meteorological data used for the Kingsville Dome site are the same as that used for the Alta Mesa site. Table 38 shows the directional-dependent average wind speed for each stability class that was used in this risk assessment for the Kingsville Dome site, while Table 39 gives the stability class frequency.

2.8.3 Radon Release

The only information identified regarding radon release from the Kingsville Dome site was in the Environmental Assessment (EA) prepared by the Texas Department of Health (TDH 1988). In the Kingsville Dome EA, the TDH estimated the annual radon release to be 6,958 Ci. If this radon release rate is assumed to correspond to the Kingsville Dome uranium production capacity, then the reported uranium production rates may be used to estimate the radon released for other years. This has been done, with the results shown in Table 44.

Table 44: Kingsville Dome Radon Release by Uranium Production

Year	Uranium Production (lbs/yr)	Radon Release (Ci/yr)
2006	94,100	655
2007	338,100	2,352
2008	254,000	1,767
2009	56,000	390
Capacity	1,000,000	6,958

The maximum annual radon release from the Kingsville Dome site is assumed to be 6,958 Ci, while the average annual release is 1,291 Ci.

2.8.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Kingsville Dome site are shown in Table 45.

Table 45: Kingsville Dome Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	6958	1291
RMEI (2500 NNW)	Dose (mrem/yr)	5.5E-03	1.1E+01	6.6E+00
	LCF Risk (yr^{-1})	2.9E-09	6.1E-06	3.5E-06
Population	Dose (person-rem/yr)	2.8E-02	5.8E+01	3.4E+01
	LCF Risk (yr^{-1})	1.8E-07	3.8E-04	2.2E-04

2.9 Eastern Generic Site – Virginia

Due to its many uranium deposits, as shown in Figure 14, the state of Virginia was selected for the location of the Eastern Generic site. In the early 1980s, uranium mining leases were obtained for 40,000 uranium-rich acres in Pittsylvania County and 16,000 acres in Fauquier, Madison, Culpeper, and Orange counties. Additionally, uranium deposits were discovered in Nelson County (UFV 2010). Because of its high population density and its past experience as a uranium mine lease site, Culpeper County was selected as the Eastern Generic site location within Virginia.

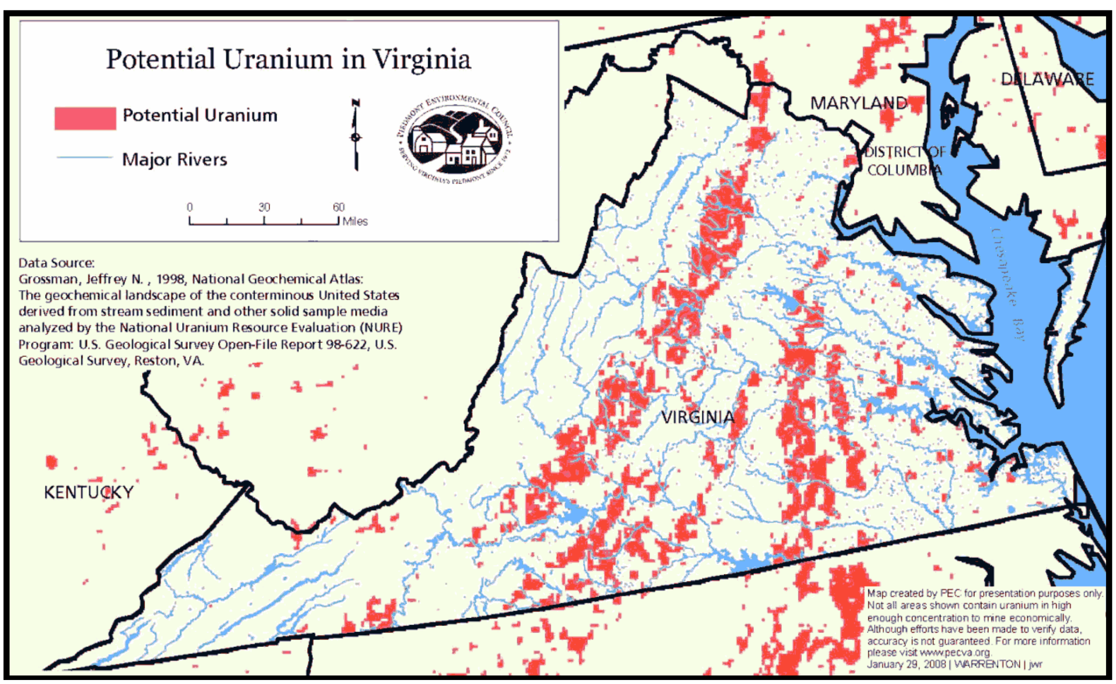

Figure 14: Potential Uranium in Virginia

The actual Eastern Generic site location within Culpeper County was selected so that there would be no population located within 1 km of the site. Figure 15 shows the approximate location of the Eastern Generic site, located in the northern portion of Virginia's Culpeper County.

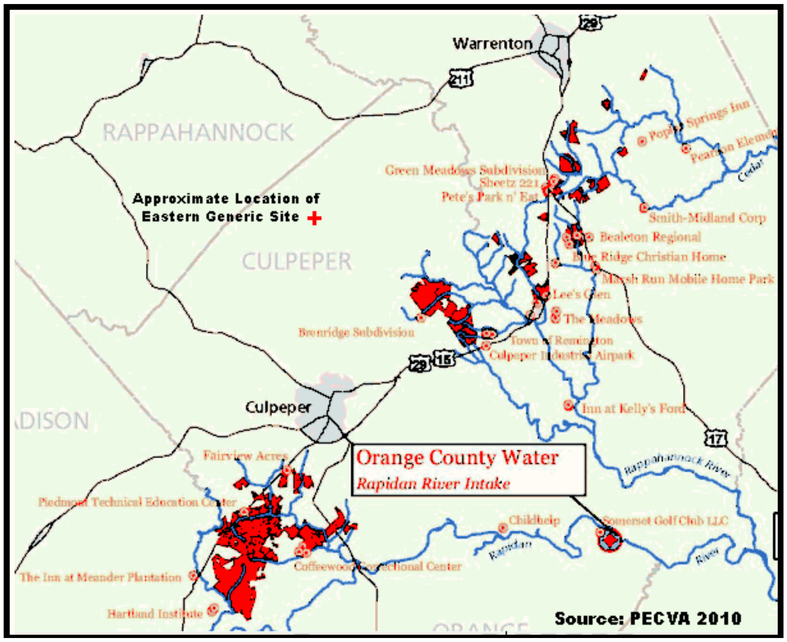

Figure 15: Approximate Location of the Eastern Generic Site

As shown in Figure 15, the Eastern Generic site is located north of the city of Culpeper and southwest of the city of Warrenton in an uninhabited area. Also, the areas in red on Figure 15 denote areas that have had uranium mine leases in the past.

2.9.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Eastern Generic site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 46. To adjust the 2000 population data to 2010, the CAP88 Eastern Generic population dose was multiplied by 1.40, see Section 1.2 and Table 3.

Table 46: Eastern Generic Site (Virginia) Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	5	160	442	588
NNW	0	11	154	0	2	816	1072
NW	0	0	0	125	76	741	2358
WNW	0	0	0	0	38	457	2105
W	0	0	0	38	0	367	2077
WSW	0	0	8	28	2	159	1608
SW	0	0	10	0	0	730	953
SSW	0	0	0	332	55	623	4037
S	0	0	0	0	0	841	10192
SSE	0	0	0	0	0	542	2474
SE	0	0	213	0	0	545	1393
ESE	0	0	143	0	130	187	598
E	0	0	197	38	35	135	349
ENE	0	0	147	1	31	176	711
NE	0	0	0	0	30	175	938
NNE	0	0	9	16	63	91	523

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	931	3140	2718	5208	36454	23280
NNW	1714	3578	3065	5089	16570	12798
NW	8464	4721	9451	11662	114035	115934
WNW	7907	8202	55966	135173	247760	367208
W	5161	2433	4498	69279	132991	40611
WSW	2868	4336	17263	58995	13734	5773
SW	1204	6574	9500	66863	23680	4796
SSW	651	3098	2808	4588	5366	7093
S	1947	3289	2997	2925	6611	4356
SSE	2407	4923	3356	6393	6092	41432
SE	2420	2990	5214	11763	17293	45571
ESE	1026	176	1095	10894	6452	50227
E	287	5893	7017	4870	11750	10706
ENE	446	3733	1566	8154	4049	1475
NE	542	2114	1487	13550	1098	1816
NNE	1160	17008	8288	19156	18827	6533

The agricultural productivity factors for Virginia were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Eastern Generic site population dose calculation.

Beef Cattle Density (cattle/km^2):	13.1
Milk Cattle Density (cow/km^2):	1.84
Land Cultivated for Vegetable Crops:	0.87%

The Eastern Generic site was selected so that there would be no population within 1 km of the site. Thus, the RMEI at the Eastern Generic site is located 1 to 2 km from the site in the NNW direction, as shown in Table 46.

2.9.2 Meteorology

The CAP88 computer program is provided with a weather library of meteorological data from over 350 NWS stations. For the Eastern Generic site, the CAP88-provided weather data for Gordonsville, VA (CAP88 File: GVE0824.WND) were used. The period of record for this data includes the years 1956 through 1960. Table 47 shows the directional-dependent average wind speed for each stability class, while Table 48 gives the stability class frequency, used in the Eastern Generic analysis.

Table 47: Eastern Generic Site (Virginia) Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	1.184	1.737	2.755	2.990	2.955	1.102	0.000
NNW	1.132	1.852	2.758	2.860	2.878	1.108	0.000
NW	1.170	1.542	2.067	2.420	2.704	1.070	0.000
WNW	1.172	1.433	2.263	2.400	3.093	1.049	0.000
W	1.141	1.473	2.120	2.163	2.678	1.028	0.000
WSW	1.177	1.876	2.622	2.463	2.935	1.086	0.000
SW	1.076	1.740	2.839	2.819	2.949	1.089	0.000
SSW	1.177	1.975	3.334	3.646	3.384	1.138	0.000
S	1.174	1.912	2.781	3.343	3.210	1.098	0.000
SSE	1.278	2.144	3.260	3.730	3.479	1.116	0.000
SE	1.204	1.990	3.147	4.179	3.569	1.133	0.000
ESE	1.238	2.327	3.518	5.455	4.076	1.164	0.000
E	1.197	1.917	3.220	4.912	3.887	1.140	0.000
ENE	1.201	2.030	3.276	4.479	3.784	1.131	0.000
NE	1.196	1.871	3.054	3.468	3.330	1.099	0.000
NNE	1.197	2.102	3.273	3.985	3.333	1.114	0.000

Table 48: Eastern Generic Site (Virginia) Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0224	0.0863	0.1225	0.3226	0.0791	0.3672	0.0000
NNW	0.0238	0.0788	0.1438	0.3242	0.0874	0.3421	0.0000
NW	0.0424	0.1049	0.1395	0.3309	0.0502	0.3321	0.0000
WNW	0.1047	0.1644	0.1440	0.3753	0.0276	0.1840	0.0000
W	0.0709	0.1887	0.1336	0.3718	0.0215	0.2134	0.0000
WSW	0.0528	0.1127	0.1576	0.4373	0.0502	0.1893	0.0000
SW	0.0206	0.0857	0.1223	0.4187	0.0629	0.2898	0.0000
SSW	0.0132	0.0509	0.0951	0.5464	0.0594	0.2350	0.0000
S	0.0108	0.0397	0.0722	0.4681	0.0522	0.3570	0.0000
SSE	0.0091	0.0519	0.0728	0.2914	0.0626	0.5122	0.0000
SE	0.0179	0.0404	0.0862	0.2618	0.0774	0.5163	0.0000
ESE	0.0159	0.0619	0.1244	0.4009	0.1222	0.2748	0.0000
E	0.0292	0.0641	0.1222	0.3285	0.1067	0.3492	0.0000
ENE	0.0290	0.1081	0.1642	0.3326	0.0826	0.2835	0.0000
NE	0.0288	0.0982	0.1551	0.3305	0.0670	0.3203	0.0000
NNE	0.0198	0.0820	0.1513	0.4027	0.0777	0.2664	0.0000
TOTAL	0.0231	0.0767	0.1219	0.3784	0.0716	0.3282	0.0000

2.9.3 Radon Release

It is assumed that a conventional uranium mine and mill would be located at the Eastern Generic site, and that the annual radon release from the Eastern Generic site would be similar to the radon released from the conventional mill located at White Mesa (see Section 2.2.3). Thus, the Eastern Generic site annual radon release was estimated to range from 1,025 to 1,750 Ci.

2.9.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Eastern Generic site are shown in Table 49.

Table 49: Eastern Generic Site Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	1750	1388
RMEI (500m SSE)	Dose (mrem/yr)	1.4E-02	2.8E+01	1.6E+01
	LCF Risk (yr^{-1})	7.6E-09	1.6E-05	9.2E-06
Population	Dose (person-rem/yr)	9.7E-02	2.0E+02	1.2E+02
	LCF Risk (yr^{-1})	6.6E-07	1.4E-03	7.9E-04

2.10 Western Generic Site – New Mexico[9]

The Grants Uranium Region in New Mexico is a world premier uranium mining district, having produced over 350 million pounds of uranium. During the 1970s, a conventional uranium mine and mill were developed by a joint venture between Long Island Lighting Company, a New York utility, and Bokum Resources Corporation. In addition to deposit development drilling, a shaft was sunk to a depth of 1,842 feet, a 2,200 ton-per-day uranium processing mill was constructed on site, and a tailings disposal site was excavated, all fully permitted. Due to the collapse in the uranium market in the early 1980s, development was halted, the deposit remains un-mined, and the mill was dismantled in 2001. According to Nuclear Regulatory Commission records, the source material license was terminated in 1988 following multiple inspections, which confirmed that no ore was ever produced or processed at the site. Although the mill has been removed, much of the infrastructure remains in place, including electric power, 1,800+ acre-feet of industrial-use water rights, the 1,842 shaft, and the previously permitted and partially completed tailings disposal site. The site is currently being considered for redevelopment as a conventional uranium mine and mill.

The Bokum mill was designed to accommodate 2,200 tons of ore feed per day. Metallurgical studies and yearly production were based on an average mill feed of 0.12% U_3O_8. Grinding was to be accomplished by a semi-autogenous mill and a rod mill. A two-stage sulfuric acid leach circuit was to be utilized. Liquid-solid separation was to use six stages of counter-current decantation, with clarification of overflows from inter-stage thickening. Solvent extraction and stripping for solubilization and removal of uranium was to be employed, and ammonia was to be used to precipitate the U_3O_8 as yellowcake.

The site of the former Bokum mine and mill was selected as the Western Generic site. It was assumed that a conventional mine and mill similar to the mine and mill previously proposed and partially constructed, but updated to reflect current 2010 technology, would be constructed.

2.10.1 Population and Food Production

The 80-kilometer population distribution in each of the 16 principal compass directions, which was calculated for the Western Generic site by SECPOP and used in CAP88 for population dose calculations, is shown in Table 50. To adjust the 2000 population data to 2010, the CAP88 Western Generic population dose was multiplied by 0.94, see Section 1.2 and Table 3.

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9 The description of the Western Generic site was abstracted from various sources, including Alief 2010, NE 2008a, and NE 2008b.

Table 50: Western Generic Site (New Mexico) Population Data

Dir	Distance (km)						
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	2
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
S	0	0	0	0	0	0	24
SSE	0	0	0	0	0	2	341
SE	0	0	0	0	0	8	45
ESE	0	0	0	0	0	2	298
E	0	0	0	0	2	12	259
ENE	0	0	0	0	0	49	163
NE	0	0	0	7	1	43	365
NNE	0	0	0	4	4	14	36

Dir	Distance (km)					
	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
N	0	4	0	1	65	206
NNW	38	294	108	468	177	693
NW	77	0	18	228	555	588
WNW	4	0	95	254	1311	308
W	0	0	0	0	7	7
WSW	0	0	0	5	3	74
SW	169	0	0	724	1951	1215
SSW	28	618	23	2285	1226	44
S	116	2674	10176	449	17	1
SSE	274	617	18	29	125	126
SE	1126	643	1	0	489	815
ESE	534	2110	269	77	15	756
E	700	511	982	2009	2928	19973
ENE	177	162	550	836	314	1318
NE	1302	1683	425	230	22	35
NNE	96	0	32	19	377	254

The agricultural productivity factors for New Mexico were taken from Appendix C of the CAP88 User's Manual, as shown below, and used in the Western Generic site population dose calculation.

Beef Cattle Density (cattle/km^2): 4.13
Milk Cattle Density (cow/km^2): 0.114
Land Cultivated for Vegetable Crops: 0.138%

As indicated in Table 50, for the Western Generic site, the nearest individual is located between 3 and 4 km in the NE and NNE directions, which is consistent with NEI 2008, which states that the nearest downwind resident is at about 2.5 miles. Through analysis with CAP88, the RMEI was identified to be located 2 to 3 km in the NNW direction.

2.10.2 Meteorology

The CAP88 computer program is provided with a weather library of meteorological data from over 350 NWS stations. For the Western Generic site, the CAP88-provided weather data for Grants, NM (CAP88 File: GNT1246.WND) were used. The period of record for this data is limited to the year 1954. Table 51 shows the directional-dependent average wind speed for each stability class, while Table 52 gives the stability class frequency, used in the Western Generic analysis.

Table 51: Western Generic Site (New Mexico) Arithmetic Average Wind Speeds (Wind Towards)

Dir	Pasquill Stability Class (m/s)						
	A	B	C	D	E	F	G
N	1.324	2.175	3.366	4.871	3.773	1.202	0.000
NNW	0.772	1.518	3.561	5.734	3.664	1.368	0.000
NW	1.271	1.951	3.733	5.719	3.751	1.278	0.000
WNW	1.183	2.088	4.141	5.835	3.697	1.337	0.000
W	0.772	1.792	2.944	3.982	3.155	0.888	0.000
WSW	0.772	4.373	4.373	4.008	4.373	1.372	0.000
SW	0.772	1.410	1.610	2.594	3.299	1.149	0.000
SSW	0.772	2.347	3.163	4.907	3.933	1.176	0.000
S	1.088	1.772	3.251	5.126	4.035	1.286	0.000
SSE	1.104	1.537	3.505	5.737	4.217	1.497	0.000
SE	1.099	1.526	3.142	5.306	4.213	1.393	0.000
ESE	1.246	1.954	3.378	6.231	4.191	1.515	0.000
E	1.324	1.732	3.819	6.684	4.040	1.419	0.000
ENE	1.183	2.174	5.214	7.451	4.189	1.496	0.000
NE	0.993	1.938	3.978	6.664	3.800	1.294	0.000
NNE	1.141	2.658	4.743	6.129	3.630	1.255	0.000

Table 52: Western Generic Site (New Mexico) Frequencies of Stability Classes (Wind Towards)

Dir	Pasquill Stability Class (frequency)						
	A	B	C	D	E	F	G
N	0.0277	0.0653	0.1118	0.2731	0.1517	0.3705	0.0000
NNW	0.0169	0.0555	0.0852	0.3901	0.1569	0.2954	0.0000
NW	0.0367	0.1338	0.1667	0.3783	0.0887	0.1959	0.0000
WNW	0.0179	0.1259	0.1877	0.4097	0.0661	0.1926	0.0000
W	0.0650	0.2801	0.1804	0.2975	0.0295	0.1474	0.0000
WSW	0.1381	0.0410	0.2127	0.1866	0.0410	0.3806	0.0000
SW	0.0875	0.2602	0.0852	0.1832	0.0665	0.3174	0.0000
SSW	0.0754	0.1447	0.1156	0.3106	0.0452	0.3085	0.0000
S	0.0464	0.1383	0.1320	0.2285	0.1295	0.3254	0.0000
SSE	0.0290	0.1021	0.1406	0.2746	0.1637	0.2899	0.0000
SE	0.0103	0.0722	0.1104	0.1905	0.2485	0.3682	0.0000
ESE	0.0188	0.0387	0.0695	0.2171	0.3169	0.3391	0.0000
E	0.0111	0.0827	0.0998	0.3827	0.1368	0.2869	0.0000
ENE	0.0238	0.0680	0.1257	0.4770	0.1423	0.1633	0.0000
NE	0.0486	0.1099	0.1260	0.4649	0.0564	0.1943	0.0000
NNE	0.0437	0.1148	0.1547	0.4117	0.0758	0.1992	0.0000
TOTAL	0.0258	0.0932	0.1243	0.3070	0.1679	0.2817	0.0000

2.10.3 Radon Release

It was assumed that a conventional uranium mill would be located at the Western Generic site, as that was the type of mill that was licensed to operate there in the 1990s. As such, it was decided to use the annual radon release from the White Mesa site for the Western Generic site (see Section 2.2.3). Thus, the Western Generic site annual radon release was estimated to range from 1,025 to 1,750 Ci.

2.10.4 Risk Estimates

The RMEI and population doses and risks calculated by CAP88 for the Western Generic site are shown in Table 53.

Table 53: Western Generic Site Risk Assessment Results

Receptor / Impact		Radon Release (Ci/yr)		
		Unitized	Maximum	Average
		1	1,750	1,388
RMEI (3500m NNW)	Dose (mrem/yr)	2.9E-03	6.0E+00	3.5E+00
	LCF Risk (yr^{-1})	3.7E-09	7.7E-06	4.4E-06
Population	Dose (person-rem/yr)	2.5E-03	5.1E+00	3.0E+00
	LCF Risk (yr^{-1})	1.3E-07	2.7E-04	1.6E-04

3.0 SUMMARY OF RESULTS

Table 54 shows the cumulative population within 80 kilometers of each site. Table 54 reveals a difference between the least populated site, Sweetwater, and the most populated site, the Eastern Generic site, of more than a factor of 200. If all other factors were equal (e.g., meteorology, radon release), this population difference would be directly reflected in the CAP88-calculated population doses. It is also interesting to note that while the Cañon City site has only about a third of the 80-km population of the Eastern Generic site, the Cañon City site has the largest population living within 10 km.

Table 54: Cumulative 2000 Population Data

Uranium Site	Distance (km)						
	0 to 1	0 to 5	0 to 10	0 to 20	0 to 40	0 to 60	0 to 80
Sweetwater	0	0	3	6	197	885	10,604
White Mesa	0	969	3,839	4,228	8,080	12,363	20,675
Crow Butte	0	51	1,336	1,869	9,324	13,251	32,676
Christensen / Irigaray	0	1	5	78	362	4,366	36,192
Western Generic	0	18	148	1,681	15,638	35,949	71,944
Smith Ranch – Highlands	0	0	2	222	5,882	55,739	79,694
Kingsville Dome	0	483	3,060	35,353	45,963	388,110	457,735
Alta Mesa	0	81	233	641	6,606	29,610	478,440
Cañon City	0	7,606	32,016	41,028	52,485	313,574	691,284
Eastern Generic	0	2,097	9,124	41,100	156,443	727,294	2,129,665

Table 54 also shows that for all of the sites analyzed, there are no people living within one kilometer of any site, and for the Sweetwater and Smith Ranch – Highland sites, the closest resident (i.e., the RMEI) is located about 7.5 km away. Table 55 compares the current actual location of the nearest resident (as determined by SECPOP) to the hypothetical worst case location (i.e., the nearest location in the most prevalent wind direction). As expected, if the distant RMEI's were to be relocated nearer the site (e.g., Sweetwater and Smith Ranch – Highland), their doses would increase significantly. In addition, changing the direction of the RMEI can have a significant effect on the dose. For example, moving the Sweetwater RMEI to the worst-case location means changing both his/her distance and direction and results in an increase of about a factor of 250, but moving the Smith Ranch – Hignland RMEI to the worst-case location means only changing his/her distance, and the dose increase is much less at only a factor of about 80.

Table 55: Comparison of Current RMEI Location Dose/Risk to Worst-Case Location Dose/Risk

Uranium Site	Current RMEI Location			Worst Case Location		Increase
	Distance (km)	Direction	Dispersion (sec/m^3)	Direction	Dispersion (sec/m^3)	
Sweetwater	7.5	NW	6.63E-08	ENE	1.65E-05	248.9
White Mesa	1.5	SSE	1.19E-06	SSW	1.73E-05	14.5
Cañon City	1.5	N	9.29E-07	S	1.63E-05	17.6
Smith Ranch - Highlands	7.5	E	1.46E-07	E	1.18E-05	81.2
Crow Butte	1.5	WSW	3.08E-07	N	1.34E-05	43.4
Christensen / Irigaray	3.5	SE	1.80E-07	ENE	1.02E-05	57.0
Alta Mesa	2.5	NNW	1.28E-06	NW	2.38E-05	18.5
Kingsville Dome	2.5	NNW	1.28E-06	NW	2.38E-05	18.5
Eastern Generic	1.5	NNE	3.76E-06	NE	3.35E-05	8.9
Western Generic	3.5	NW	2.11E-07	SE	4.52E-05	70.5

For each of the 10 uranium sites analyzed in this report, Table 56 presents the CAP88-calculated RMEI and population dose and risk, normalized to the radon release. To estimate the annual dose or risk for a site, simply multiply the normalized dose or risk from Table 56 by the site's annual radon release. For example, if the radon release at the Sweetwater site was 2,075 Ci/yr, then the annual RMEI dose at Sweetwater would be 2,075 Ci/yr × 5.6E-04 mrem/Ci = 1.16 mrem/yr.

Table 56: Calculated RMEI and Population Dose and Risk Normalized to the Radon Release

Uranium Site	Dose (Ci^{-1})		LCF Risk (Ci^{-1})	
	Population (person-rem)	RMEI (mrem)	Population	RMEI
Sweetwater	2.3E-04	5.6E-04	1.4E-09	2.9E-10
White Mesa	2.5E-03	5.8E-03	1.6E-08	3.1E-09
Cañon City	2.4E-02	5.0E-03	1.5E-07	2.6E-09
Smith Ranch - Highlands	1.8E-03	7.2E-04	1.1E-08	3.7E-10
Crow Butte	1.3E-03	1.6E-03	8.4E-09	8.4E-10
Christensen / Irigaray	1.8E-03	9.1E-04	1.2E-08	4.8E-10
Alta Mesa	1.0E-02	5.6E-03	6.3E-08	3.0E-09
Kingsville Dome	2.8E-02	5.5E-03	1.8E-07	2.9E-09
Eastern Generic	9.7E-02	1.4E-02	6.6E-07	7.6E-09
Western Generic	2.5E-03	2.9E-03	1.3E-07	3.7E-09

Presenting the normalized doses and risks allows analysis of the effect that siting has on dose and risk without the complications posed by the different mining and/or milling operations. From Table 56, it can be seen that the RMEI dose/risk can vary by up to about a factor of 50, depending on the site where the radon release occurs, while the population dose/risk can vary by up to a factor of 450, depending on the site. This population factor is consistent with the factor of 200 difference in the 80 km cumulative population difference identified in Table 54, plus another factor to account for meteorological differences between the sites and the actual location of the population (e.g., if a large fraction of the population is located in a predominant wind direction at one site, that site will have a larger population dose/risk than a similar population located in a minor wind direction at another site).

Table 57 presents the RMEI and population doses and risks due to the maximum radon releases estimated in Section 2.0, for each uranium site. The maximum radon releases were used to calculate the doses in order to be able to compare the results to regulatory criteria. For example, 10CFR § 20.1301 "Dose Limits for Individual Members of the Public" restricts the total effective dose equivalent (TEDE) to individual members of the public from the licensed operation to less than 100 mrem per year.

Table 57: Calculated Maximum Total Annual RMEI, Population Dose and Risk

Uranium Site	Maximum Radon Release (Ci/yr)	Annual Dose		LCF Risk[(a)] (yr^{-1})	
		Population (person-rem)	RMEI (mrem)	Population	RMEI
Sweetwater	2,075	0.5	1.2	2.9E-06	6.0E-07
White Mesa	1,750	5.2	12.0	3.4E-05	6.4E-06
Cañon City	269	49.2	10.3	3.1E-04	5.4E-06
Smith Ranch - Highlands	36,500	3.7	1.5	2.3E-05	7.7E-07
Crow Butte	8,885	2.7	3.3	1.7E-05	1.7E-06
Christensen / Irigaray	1,600	3.8	1.9	2.4E-05	9.9E-07
Alta Mesa	740	21.6	11.5	1.3E-04	6.1E-06
Kingsville Dome	6,958	58.0	11.3	3.8E-04	6.1E-06
Eastern Generic	1,750	200.3	28.2	1.4E-03	1.6E-05
Western Generic	1,750	5.1	6.0	2.7E-04	7.7E-06

[(a)]Latent Cancer Fatalities

Table 58 presents the RMEI and population doses and risks due to the average radon releases estimated in Section 2.0 for each uranium site. The risks were based on average radon releases in order to make it easier to convert these annual risk values into lifetime risk values, by simply multiplying the Table 58 values by the number of years that the facility operates for the population risk or by the length of time that the individual lives next to the facility for the RMEI risk.

Table 58: Calculated Average Total Annual RMEI, Population Dose and Risk

Uranium Site	Average Radon Release (Ci/yr)	Annual Dose		LCF[a] Risk (yr^{-1})	
		Population (person-mrem)	RMEI (rem)	Population	RMEI
Sweetwater	1,204	0.3	0.7	1.7E-06	3.5E-07
White Mesa	1,388	3.0	7.0	2.0E-05	3.7E-06
Cañon City	146	28.6	6.0	1.8E-04	3.1E-06
Smith Ranch - Highlands	21,100	2.2	0.9	1.3E-05	4.5E-07
Crow Butte	4,467	1.6	1.9	1.0E-05	1.0E-06
Christensen / Irigaray	1,040	2.2	1.1	1.4E-05	5.7E-07
Alta Mesa	472	12.5	6.7	7.6E-05	3.6E-06
Kingsville Dome	1,291	33.6	6.6	2.2E-04	3.5E-06
Eastern Generic	1,388	116.3	16.4	7.9E-04	9.2E-06
Western Generic	1,388	3.0	3.5	1.6E-04	4.4E-06

[a]Latent Cancer Fatalities

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AGENDA

Utah/EPA Radionuclide NESHAP Quarterly Call

November 17, 2011

Call in: 1-866-299-3188, Code: 303-312-6344#

1. Purpose of Call and Invitees

2. EPA R8 Rad NESHAP Activities and Actions
   a. Approvals: Whirlwind Mine (CO) and Piñon Ridge (CO)
   b. Applications: Lost Creek ISR (WY)
   c. Questions on Subpart W and Closed Impoundments

3. Utah Rad NESHAP Activities and Actions

4. White Mesa Impoundments and Subpart W

5. Subpart W Rulemaking Update

6. Additional Items: questions; outstanding interpretations; etc.

7. Items for next call (February 16, 2012, 9am)

EPA-2874

Angelique Diaz/R8/USEPA/US

11/16/2011 12:28 PM

To jpmorris, Albion Carlson, Reid Rosnick

cc Deborah Lebow-Aal

bcc

Subject UT/EPA Rad NESHAP Call - Agenda

Here is the agenda for tomorrow's Rad NESHAP call. If you have any items you would like me to add let me know by COB today.

UT EPA NESHAP Call, 111711.pdf

Angelique D. Diaz, Ph.D.
Environmental Engineer
Air Program, USEPA/Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Office: 303.312.6344
Fax: 303.312.6064
diaz.angelique@epa.gov

EPA-4989

Alan Perrin/DC/USEPA/US
11/16/2011 05:58 PM

To Raymond Lee, Daniel Schultheisz, Tom Peake
cc Brian Littleton, Reid Rosnick, Jonathan Edwards
bcc
Subject T1 schedules

Ray, Dan,

Here is the "regs" update file. Dan, I talked to you briefly about this last week and I talked to Ray about it just now; please touch base with each other tomorrow morning. We need to update the file with realistic dates for the 190 and the Subpart W schedules. Also need to modify the 190 language (NRC meeting is now past tense -- may want to delete the reference and replace it with something on the op/ord request for an early guidance meeting). I'm out of the office tomorrow morning, but hope to see the mods by the end of the day. Thanks, Alan

T1_status_11-11.docx

~~~~~~~~~~~~~~~~~~~~

Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376
~~~~~~~~~~~~~~~~~~~~

RPD Actions – Status Update – November 8, 2011

Protective Action Guides (PAGs):
EPA submitted (draft for public comment) PAG revisions to the Office of Management and Budget (OMB) on July 22, 2011. OMB review is continuing (analyst Chad Whitman). RPD has met with OMB staff to discuss initial comments.

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EPA-3476

Brian Littleton/DC/USEPA/US		To	Andrea Cherepy
11/17/2011 09:17 AM		cc	
		bcc	
		Subject	Fw: T1 schedules

FYI - Probably just an oversight, but it does talk about your stuff as well.
Good news is looks like you got some schedule relief!

B
****

Brian Littleton
EPA, Office of Air and Radiation/Radiation Protection Division
1200 Pennsylvania Avenue, NW - Mailcode 6608J
Washington D.C. 20460
(202) 343-9216

----- Forwarded by Brian Littleton/DC/USEPA/US on 11/17/2011 09:16 AM -----

From:	Alan Perrin/DC/USEPA/US
To:	Raymond Lee/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Cc:	Brian Littleton/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA
Date:	11/16/2011 05:58 PM
Subject:	T1 schedules

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Alan Perrin, Deputy Director
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New	6/30/11	12/15/11	1/20/12	2/29/12

EPA-3916

Daniel Schultheisz/DC/USEPA/US	To	Raymond Lee
11/17/2011 10:57 AM	cc	Alan Perrin, Brian Littleton, Jonathan Edwards, Reid Rosnick, Tom Peake, Andrea Cherepy
	bcc	
	Subject	Re: T1 schedules

Here's a proposed revision based on conversations with Tom and Reid this morning. Note that the tables now include date for submittal to OP (In SCOUT this appears to be combined with actual OMB submittal). It might take a week or two to clear OP.

The dates for part 190 address two possibilities: 1) we are able to have the "early guidance" meeting (this date in SCOUT is for options selection) in December, or 2) we can't do it until January. Brian has a workgroup meeting today and hopefully we will get some clarification about what OP sees as the purpose of an early guidance meeting. If we need to do one, we'll have to brief Mike and Gina/Jim, so timing will be tight for December. Tom and Jon agreed to put the less optimistic dates in SCOUT, but we will work to improve upon them.

The dates for part 192 have been adjusted to give a bit more time for options selection. We had about seven weeks between FAR and OMB, so have trimmed that to five (which may still turn out to be more than necessary). We also realized that the date for signature in SCOUT should have been August 31, rather than August 3. This puts us right at the edge of September, and we will probably be discouraged from pushing it further.

The dates for subpart W are contingent on assuming the following sequence: 1) Reid circulates revised package to workgroup this week (i.e., tomorrow); 2) comments back from workgroup by December 5 (Monday); 3) final okay from workgroup members December 12; 4) circulation of FAR package by December 16. This gives a bit more than four weeks to the FAR date of January 17, which hopefully will accommodate holiday cheer. Of course we can't keep to this schedule without OGC input, so Sue probably needs to get everything to Reid by the December 5 date.

Let me know if something looks fishy.

T1_status_11-17.docx

Raymond Lee	Hi all, Just wanted to piggy-back on Alan's mess...	11/16/2011 06:08:12 PM

From: Raymond Lee/DC/USEPA/US
To: Alan Perrin/DC/USEPA/US@EPA
Cc: Brian Littleton/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Jonathan Edwards/DC/USEPA/US@EPA, Reid Rosnick/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
Date: 11/16/2011 06:08 PM
Subject: Re: T1 schedules

Hi all,

Just wanted to piggy-back on Alan's message...

Brian, after taking a look at the dates you have in the revised PAB, they are a bit confusing when trying to compare them to what's in our systems. I have attached the current list of milestones in RAPIDS & SCOUT. To avoid any type of misinterpretation (and since OAR will be targeting these SCOUT dates), we should probably align what we have at the end of the PAB to the exact same milestones we have in our tracking systems.

Since we're still getting these together, the early guidance (11/18) and detailed analytic blueprint (11/29) dates haven't been changed for the SCOUT meeting tomorrow. I'll inform everyone that they'll definitely be pushed out, but we're still awaiting final word from our management on the exact dates.

Dan - I have some other morning & lunch meetings but will be back at my desk in the afternoon for the SCOUT call at 1:00. Otherwise, you can always get at me via e-mail.

Thanks!

Ray

[attachment "190milestones.jpg" deleted by Daniel Schultheisz/DC/USEPA/US]

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.

Alan Perrin	Ray, Dan, Here is the "regs" update file. Dan, I t...	11/16/2011 05:58:22 PM

From: Alan Perrin/DC/USEPA/US
To: Raymond Lee/DC/USEPA/US@EPA, Daniel Schultheisz/DC/USEPA/US@EPA, Tom Peake/DC/USEPA/US@EPA
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[attachment "T1_status_11-11.docx" deleted by Daniel Schultheisz/DC/USEPA/US]
~~~~~~~~~~~~~~~~~~~~
Alan Perrin, Deputy Director
Radiation Protection Division, USEPA
office (202) 343-9775 | bb (202) 279-0376
~~~~~~~~~~~~~~~~~~~~

RPD Actions – Status Update – November 17~~8~~, 2011

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Date	Options ("Guidance")	FAR	To OP	To OMB	Signature
Old	11/9/11	11/20/11		11/30/11	12/23/11
New	12/9/11 (if possible)	1~~2~~/11~~20~~/12~~1~~	1/18/12	1~~2~~/27~~30~~/1~~1~~2	2~~1~~/22~~3~~/12
	1/11/12 (if not 2011)	2/11/12	2/8/12	2/22/12	3/14/12

Formatted Table

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EPA-2848

Angelique Diaz/R8/USEPA/US

11/21/2011 12:18 PM

To Reid Rosnick

cc

bcc

Subject Fw: Notice of Filing on CAA-08-2012-0001 DENISON MINES (USA) CORP.

FYI

Angelique D. Diaz, Ph.D.
Environmental Engineer
Air Program, USEPA/Region 8
1595 Wynkoop Street (8P-AR)
Denver, CO 80202-1129
Office: 303.312.6344
Fax: 303.312.6064
diaz.angelique@epa.gov

----- Forwarded by Angelique Diaz/R8/USEPA/US on 11/21/2011 10:18 AM -----

From: Joshua Rickard/R8/USEPA/US
To: Jay Morris <JPMORRIS@utah.gov>, Angelique Diaz/R8/USEPA/US@EPA, Robert Duraski/R8/USEPA/US@EPA
Cc: Deborah Lebow-Aal/R8/USEPA/US@EPA
Date: 11/21/2011 06:11 AM
Subject: Fw: Notice of Filing on CAA-08-2012-0001 DENISON MINES (USA) CORP.

Finally official.

Joshua Rickard
Air Quality Monitoring
Office of Partnerships and Regulatory Assistance
Mail Code 8P-AR
1595 Wynkoop Street
Denver, CO 80202-1129
voice - (303) 312-6460
fax - (303) 312-6064

----- Forwarded by Joshua Rickard/R8/USEPA/US on 11/21/2011 06:08 AM -----

From: Tina Artemis/R8/USEPA/US
To:
Date: 11/17/2011 03:16 PM
Subject: Notice of Filing on CAA-08-2012-0001 DENISON MINES (USA) CORP.

The following decision has been rendered on the case listed below.

Type: CAFO/ESA/Stipulated Penalty
Description: COMPLAINT, CONSENT AGREEMENT/FINAL ORDER
CAA-08-2012-0001
DENISON MINES (USA) CORP.

CAA0820120001 CAFO.pdf

Tina Artemis
Paralegal/Regional Hearing Clerk
U. S. EPA - Region 8
1595 Wynkoop Street (8RC)
Denver, CO 80202-1129
303-312-6765
artemis.tina@epa.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 WYNKOOP STREET
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

2011 NOV 17 PM 2: 25

FILED
EPA REGION VIII
HEARING CLERK

DOCKET NO.: CAA-08-2012-0001

IN THE MATTER OF:	)	
	)	
DENISON MINES (USA) CORP.	)	**FINAL ORDER**
1050 17th Street, Suite 950	)	
Denver, CO 80265	)	
	)	
RESPONDENT	)	

Pursuant to 40 C.F.R. §22.13(b) and 22.18, of EPA's Consolidated Rules of Practice, the Consent Agreement resolving this matter is hereby approved and incorporated by reference into this Final Order. The Respondent is hereby **ORDERED** to comply with all of the terms of the Settlement Agreement, effective immediately upon receipt by Respondent of this Consent Agreement and Final Order.

SO ORDERED THIS 17th **DAY OF** November**, 2011.**

Elyana R. Sutin
Regional Judicial Officer

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 8

2011 NOV 17 PM 2:25

FILED
EPA REGION VIII
HEARING CLERK

In the Matter of:	)	
	)	
DENISON MINES (USA) CORP.	)	CONSOLIDATED COMPLAINT
1050 17^{th} Street, Suite 950	)	AND CONSENT AGREEMENT
Denver, CO 80265	)	
	)	
Respondent	)	Docket No. CAA-08-2012-0001

AUTHORITY

Pursuant to authority under 40 C.F.R. § 22.13(b), Complainant, the United States Environmental Protection Agency, Region 8 (EPA), and Respondent, Denison Mines (USA) Corp., by their undersigned representatives, hereby settle the civil cause of action arising out of violations of Section 112 of the CAA, 42 U.S.C. § 7412 and implementing regulations, and agree as follows:

STATUTORY AND REGULATORY BACKGROUND

1. Congress has enacted Section 112 of the CAA to require the EPA to regulate sources of hazardous air pollutants (HAPs) and to establish National Emission Standards for Hazardous Air Pollutants (NESHAPs). 42 U.S.C. § 7412.

2. Pursuant to Section 112(c)(1), 42 U.S.C. § 7412(c)(1), the EPA is required to publish a list of all categories and subcategories of major sources and area sources of HAPs.

3. The EPA has designated underground uranium mines as a category subject to the requirements of Section 112 of the CAA.

4. Section 112(d) of the CAA, 42 U.S.C. § 7412(d), requires the EPA to establish NESHAPs for each category or subcategory of major sources and area sources of HAPs.

5. On December 15, 1989, the EPA promulgated 40 C.F.R. Part 61, Subpart B, "National Emission Standards for Radon Emissions from Underground Uranium Mines." 54 Fed. Reg. 51654, 51694.

6. Subpart B applies to owners and/or operators of active underground uranium mines that are designed to mine over 100,000 tons of ore during the life of the mine or 10,000 tons of ore annually. 40 C.F.R. § 61.20.

7. Section 61.21(a) of Subpart B defines an "active" underground uranium mine as one that is "being ventilated to allow workers to enter the mine for any purpose." 40 C.F.R. § 61.21(a).

8. Section 61.22 of Subpart B provides that "emissions of radon-222 to the ambient air from an underground uranium mine shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 millirem per year."

9. Section 61.23(a) of Subpart B provides that compliance with the standard in 40 C.F.R. § 61.22 "shall be determined and the effective dose equivalent calculated by the EPA computer code COMPLY-R." Section 61.23 further provides that "an underground uranium mine owner or operator shall calculate the source terms to be used for input into COMPLY-R by conducting testing in accordance with the procedures described in appendix B, Method 115."

10. Section 1.1.1(a) to Method 115, found in Appendix B to 40 C.F.R. Part 61, provides that "the radon-222 concentration shall be continuously measured at each mine vent whenever the mine ventilation system is operational."

11. Section 113(a)(3) of the CAA provides that when any person has violated any requirement or prohibition of Subchapter I of the CAA, including Section 112, the Administrator of the EPA may, *inter alia*, issue an administrative penalty order in accordance with Section 113(d).

RESPONDENT

12. Respondent is a Delaware corporation that operates and through its affiliate owns the underground La Sal Mines located near La Sal, San Juan County, Utah.

13. Respondent is a "person" as defined in Section 302(3) of the Clean Air Act, 42 U.S.C. § 7602(e), and the federal and state regulations promulgated pursuant to the CAA.

14. Underground uranium mining by the Respondent results in emissions of radon-222 to the outside air. The primary sources of these emissions are vents from the underground mine to the surface.

15. The La Sal Mines operation is an "active underground uranium mine" subject to the requirements of the NESHAPs for Radon Emissions for Underground Uranium Mines found at 40 C.F.R. Part 61, Subpart B.

FINDINGS OF FACT

16. On April 27, 2010, the EPA staff inspected the La Sal mines. The EPA has also reviewed records received from Denison regarding the La Sal mines operations.

17. During the inspection, Vent 1350 was observed to be venting to the atmosphere without monitoring. Records show that the vent was venting from April 18 - 27, 2010 without monitoring. Records show that Vent 1350 was also venting to the atmosphere without a monitor on January 12 through February 15, 2010; and March 31 through April 8, 2010.

18. The vents named Pandora 3, Pandora 7, and Pandora 12 are naturally venting shafts that vent in or out based on atmospheric and mine conditions. Records show that the vents did not have monitors from January through April, 2010.

19. A Notice of Violation, Docket No. CAA-08-2010-0016, was issued to Respondent on August 17, 2010.

FINDING OF VIOLATIONS

20. Emissions of radon-222 from Vent 1350 have not been continuously measured, in violation of 40 C.F.R. § 61.23(a) and Method 115, and Section 112 of the CAA, 42 U.S.C. § 7412, from on or about April 18 through April 27, 2010; January 12 through February 15, 2010; and March 31 through April 8, 2010 .

21. Emissions of radon-222 from the vents named Pandora 3, Pandora 7, and Pandora 12 have not been continuously measured, in violation of 40 C.F.R. § 61.23(a) and Method 115, and Section 112 of the CAA, 42 U.S.C. § 7412, from on or about January through April 2010.

FINAL SETTLEMENT

22. Respondent admits the jurisdictional allegations and neither admits nor denies the factual allegations stated above.

23. Respondent waives its rights to a hearing before any tribunal, and to contest any issue of law or fact set forth in this Consolidated Complaint and Consent Agreement.

24. The EPA and Respondent (Parties) agree that this Consolidated Complaint and Consent Agreement resolves all violations described in paragraphs 20 and 21 above.

25. This Consolidated Complaint and Consent Agreement, upon incorporation into a Final Order, applies to and is binding upon the EPA and upon Respondent and Respondent's heirs, successors and assigns. Any change in ownership or corporate status of Respondent, including, but not limited to, any transfer of assets or real or personal property, shall not alter Respondent's responsibilities under this agreement. This Consolidated Complaint and Consent Agreement contains all terms of the settlement agreed to by the Parties.

26. Section 113(d)(1)(B) of the CAA and 40 C.F.R. Part 19 authorize the assessment of a civil penalty of up to $32,500 per day for each violation of the regulations associated with the NESHAPs program. For purposes of determining the amount of any civil penalty to be assessed, Section 113(e)(1) of the CAA, 42 U.S.C. § 7413(e)(1), requires that the EPA

> . . . as appropriate, shall take into consideration (in addition to such other factors as justice may require) the size of the business, the economic impact of the penalty on the business, the violator's full compliance history and good faith efforts to comply, the duration of the violation as established by any credible evidence, payment by the violator of penalties previously assessed for the same violation, the economic benefit of noncompliance, and the seriousness of the violation.

27. Based on the factors listed in paragraph 26, and Respondent's acknowledgment that it has corrected the violations described in paragraphs 20 and 21 above, the EPA has

determined that an appropriate civil penalty to settle this action is Forty Thousand Dollars ($40,000).

28. Respondent consents, for the purpose of settlement, to the issuance of a final order in this matter and agrees to pay the civil penalty cited in the foregoing paragraph as follows:

a. Payment is to be made of Forty Thousand Dollars ($40,000) due within 30 calendar days from the effective date of the final order, issued by the Regional Judicial Officer, which incorporates the terms of this Consolidated Complaint and Consent Agreement. If the due date falls on a weekend or legal Federal holiday, the due date is the next business day. Payments must be received by 11:00 a.m. Eastern Standard Time to be considered as received that day.

b. Payment of the penalty shall: (1) be made by certified or cashier's check payable to "Treasurer, United States of America;" (or be paid by one of the other methods listed below) (2) identify the case title and docket number of this action (either on the check or in a transmittal letter accompanying the check); and (3) remitted to:

Regular Mail:

U.S. Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Center
P.O. Box 979077
St. Louis, MO 63197-9000

Overnight Mail:

U.S. Bank
1005 Convention Plaza
Mail Station SL-MO-C2GL
St. Louis, MO 63101
Contact: Natalie Pearson
314-418-4087

Wire Transfers:

Wire transfers must be sent directly to the Federal Reserve Bank in New York City with the following information:
Federal Reserve Bank of New York
ABA: 021030004
Account: 68010727
SWIFT address: FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental Protection Agency"

On Line Payment:

This payment option can be accessed from the information below:
www.pay.gov
Enter sfo1.1 in the search field
Open form and complete required fields

c. A copy of the check or notification that the payment has been made by one of the other methods listed above, including proof of the date payment was made shall be sent to both:

Tina Artemis
Regional Hearing Clerk (8RC)
U.S. EPA, Region 8
1595 Wynkoop Street
Denver, Colorado 80202-1129

and to:

Joshua Rickard
U.S. EPA, Region 8
1595 Wynkoop Street
Denver, Colorado 80202

46. In the event payment is not received by the specified due date, interest accrues from the date of the final order, not the due date, at a rate established by the Secretary of the Treasury pursuant to 31 U.S.C. § 3717, and will continue to accrue until payment in full is received.

47. In addition, a handling charge of fifteen dollars ($15) shall be assessed the 61^{st} day from the date of the final order, and each subsequent thirty-day period that the debt, or any portion thereof, remains unpaid. In addition, a six percent (6%) per annum penalty shall be assessed on any unpaid principal amount if payment is not received within 90 days of the due date. Payments are first applied to handling charges, 6% penalty interest, and late interest; then any balance is applied to the outstanding principal amount.

48. Respondent agrees that the penalty shall never be claimed as a federal or other tax deduction or credit.

49. Nothing in this Consolidated Complaint and Consent Agreement shall relieve Respondent of the duty to comply with the CAA and its implementing regulations.

50. Failure by Respondent to comply with any term of this Consolidated Complaint and Consent Agreement shall constitute a breach of the consent agreement and may result in referral of the matter to the Department of Justice for enforcement of this agreement and such other relief as may be appropriate.

51. Nothing in this Consolidated Complaint and Consent Agreement shall be construed as a waiver by the EPA or any other federal entity of its authority to seek costs or any appropriate penalty associated with any collection action instituted as a result of Respondent's failure to perform pursuant to the terms of this Agreement.

52. The undersigned representative of the Respondent certifies that he is fully authorized to enter into the terms and conditions of this Consolidated Complaint and Consent Agreement and to bind Respondent to the terms and conditions of this Agreement.

53. The parties agree to submit this Consolidated Complaint and Consent Agreement to the Regional Judicial Officer, with a request that it be incorporated into a final order.

54. Each Party shall bear its own costs and attorney fees in connection with this matter.

55. This Consolidated Complaint and Consent Agreement, upon incorporation into a final order by the Regional Judicial Officer and full satisfaction by the Parties, shall be a complete and full civil settlement of the specific violations alleged in the complaint portion of this Consolidated Complaint and Consent Agreement.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 8

Date: 11/15/11

By: ______________________
Andrew M. Gaydosh
Assistant Regional Administrator
Office of Enforcement, Compliance, and
Environmental Justice

DENISON MINES (USA) CORP.

Date: October 31, 2011

By: ______________________
Harold R. Roberts
Executive Vice President
U.S. Operations

CERTIFICATE OF SERVICE

The undersigned certifies that the original of the attached **CONSOLIDATED COMPLAINT CONSENT AGREEMENT/FINAL ORDER** in the matter of **DENISON MINES (USA) CORP.; DOCKET NO.: CAA-08-2012-0001.** The documents were filed with the Regional Hearing Clerk on November 17, 2011.

Further, the undersigned certifies that a true and correct copy of the documents were delivered Linda Kato, Senior Enforcement Attorney, U. S. EPA – Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129. True and correct copies of the aforementioned documents were placed in the United States mail certified/return receipt requested on November 17, 2011.

David C. Frydenlund, Vice President
Regulatory Affairs and Counsel
Denison Mines (USA) Corp.
1050 17th Street, Suite 950
Denver, CO 80265

E-mailed to:

Elizabeth Whitsel
U. S. Environmental Protection Agency
Cincinnati Finance Center
26 W. Martin Luther King Drive (MS-0002)
Cincinnati, Ohio 45268

November 17, 2011

Tina Artemis
Paralegal/Regional Hearing Clerk

EPA-1585

Raymond Lee/DC/USEPA/US		To	Reid Rosnick
11/22/2011 04:51 PM		cc	
		bcc	
		Subject	Re: Preparing for FAR

Hi Reid,

So I've been told that Gina or someone at the AA level does not normally attend FAR meetings; they are normally scheduled through Wanda Farrar. I would suggest touching base with her (and Tom Eagles if she's not available) to set things up. I've also attached a sample memo that OAQPS did for their FAR meeting as an example.

Thanks!

Ray

FARmemoCISWI.pdf

Ray Lee | Center for Radiation Information and Outreach (CRIO) | US EPA | Phone 202.343.9463 | Fax 202.343.2305 | lee.raymond@epa.g

Reid Rosnick Hi Ray, As you know, I'm preparing for the FAR... 11/22/2011 10:44:14 AM

From: Reid Rosnick/DC/USEPA/US
To: Raymond Lee/DC/USEPA/US@EPA
Date: 11/22/2011 10:44 AM
Subject: Preparing for FAR

Hi Ray,

As you know, I'm preparing for the FAR meeting for Subpart W. Can you tell me who I need to contact in order to coordinate what I need for the meeting? Thanks

Reid

Reid J. Rosnick
Radiation Protection Division (6608J)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460
202.343.9563
rosnick.reid@epa.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 30 2011

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Final Agency Review for Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units; Reconsideration and Proposed Rule Amendments (Tier 1; SAN 5105.1, RIN 2060-AR15)

FROM: for Wanda Farrar
Steering Committee Representative, OAR

TO: Addressees

The Final Agency Review meeting for the Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units (CISWI); Reconsideration and Proposed Rule Amendments is scheduled for Friday, October 7, 2011, at 2:00 p.m. The conference call-in number is (919) 541-4432. Conference room number 4530 in the Ariel Rios Building, Washington, D.C., has been reserved.

The Final Agency Review packages are attached. The proposed CISWI Amendments are being developed as a Tier 1 projects under the EPA's regulatory development process.

Final Agency Review for work group closure is the final point for internal Agency concurrence for the attached package. The Final Agency Review meeting provides a forum for confirming that:

1. The workgroup has successfully completed its job and all issues have been resolved or elevated;

2. The package (action and relevant documents) is complete and ready for Office of Management and Budget review or the Administrator's signature; and

3. All Agency and external requirements have been met.

Each workgroup member must come to the meeting representing the position of his/her Assistant Administrator (AA)/Regional Administrator (RA). Prior to the meeting, you should either have briefed the AA/RA or their representative (if delegated), or have received written sign-off. In addition, any documents should be given in writing to the workgroup chair and the Regulatory Management Division (RMD) of the Office of Policy (OP) at the meeting.

Your response at this meeting will constitute your AA's/RA's position in one of three ways: "concurrence," "concurrence with comment," or "nonconcurrence." "Concurrence" should be used to show full agreement; although strictly editorial or non-substantive comments should also be included in this category of response. "Concurrence with comment" indicates that the concurring office would like the package to move forward but has substantive disagreements or issues. "Nonconcurrence" indicates that the responding office does not think the package should move forward and has major substantive concerns. If a participating Office or Region is not represented at the meeting, or has not previously contacted the Workgroup Chair or the RMD with a position, "concurrence without comment" will be assumed.

You should come to the meeting prepared to respond with one of these choices and to briefly characterize any issues on which you have comments. The RMD will provide a closure memorandum subsequent to the meeting documenting all positions given and any further action agreed upon. If, prior to signature, the lead Office is unable to incorporate requested changes that have AA/RA level support, it should address them, and the reasons for rejecting them, in the action memorandum to the Administrator that accompanies the package for signature.

If you have any questions concerning this package, please call Toni Jones at (919) 541-0316.

Attachments

Addressees (Workgroup Members):
Gregory Fried, OECA
George Faison, OSWER
Paul Versace, OGC
Stan Durkee, ORD
Brian Gullett, ORD
Tom Gillis, OP
Jim Topsale, Region 3
Heather Valdez, Region 10

Steering Committee Members,
Nicole Owens, OP
Bob Fegley, ORD (8104R)
Marily Kuray, OGC (2322A)
Lesley Schaaff, OP (1803A)
Gerain Perry, OSWER (5103T)
Gerard Kraus, OECA (2201A)
Maryann Ruiz, Region 3
Andrea Westenberger, Region 10

cc:

Lisa Garcia, OECA,OEJ
Teresa Clemons
Bob Wayland
Tom Walton

Brian Shrager
Jim Eddinger
Amy Cole, OP
Darryl Adams. OP