

CROW BUTTE RESOURCES, INC.

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January 30, 1997

Mr. Joseph Holonich, Chief
Uranium Recovery Branch
Division of Waste Management
NMSS (T-7-J9)
Office of Nuclear Material Safety and Safeguard
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20850

RE: Docket No. 40-8943
License No. SUA-1534

Dear Mr. Holonich:

During the month of November 1996, a plugged and abandoned well was found to be leaking. The abandoned well was the original I752-14, but due to a casing leak at about 100 feet, the well did not pass the Mechanical Integrity Test (MIT). On December 2, 1996, a Grundfos JP-5 jet pump was installed to begin pumping from the well to investigate the possibility that mining solution may have leaked into the shallow aquifer at this 100 foot zone. A sample was collected on December 3, 1996 and the conductivity of this sample was 2130 micromhos/cm indicating a possible problem. A second sample was collected on December 4, 1996. This sample confirmed the results of the first sample with a conductivity of 2120 micromhos/cm. Your Department was notified of these results by telephone on December 5, 1996 and by letter on December 10, 1996. This letter is to apprise you of the results to date of the areal delineation, the water sampling analyses, and the remediation efforts for this excursion.

On December 9, 1996, two delineation wells were installed. Because of the depth of the affected zone and to prevent possible contamination of upper zones, the wells were drilled to a depth immediately above the affected zone, then cased and cemented. The wells were developed

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by drilling out below the casing, through the affected zone, using only fresh water, screened, and airlifted. The completion data for these wells is included as Table 1 (attached). Well 752b is located approximately 63 feet northeast of I752-14, while well 752c was drilled 45 feet to the northwest.

Table 2 (attached) lists the analytical results of the multiple water samples taken from these delineation wells as well as I752-14. Also included are various water analyses from three deeper Shallow Monitor Wells from Mine Unit 5. The water samples for 752b and 752c were collected with a one liter, plastic sampling device (Sampling Specialties, Inc., SGI), which was manually lowered and retrieved from down hole. This sampling method is noted on Table 2 as "bailer". The samples collected from these delineation wells do not show any signs of contamination. Also, it should be noted that well 752c appears to be down gradient of I752-14. From water level data gathered in Section 2.7.2 entitled "Groundwater" for the USNRC Commercial Source Materials License presented by Crow Butte Resources (CBR), it appears that the direction of flow in the local Brule sands is north-northwest. Since 752c is only 45 feet down gradient of I752-14 and no contamination is present in 752b, CBR believes the spill to be relatively small in nature and that these two shallow wells effectively delineate the problem. Therefore, CBR has no plans to drill another delineation well at this time. If in the future, however, events deem it necessary CBR will drill more wells as needed.

To begin recovery of the leaked water, production was begun from the 100 foot zone in I752-14 on a continuous basis on December 30, 1996. A packer has been set at about 110 feet to isolate the hole in the casing. A JP-5 Grundfos jet pump installed in the well is pumping about 1 gpm. The recovered water is pumped to a nearby injection mining well, I752a-14. Table 3 (attached) provides a history of flowrates, volumes, and conductivities recovered from I752-14. At this time, CBR believes the spill will be cleaned up by continuous pumping from I752-14 since the water samples from this well are approaching baseline (Table 2).

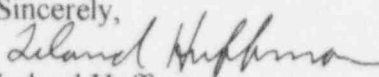
In response to this event, CBR has begun a program to check other wells plugged in a similar fashion for possible problems. Also, CBR will review its plugging and abandonment procedures and make changes as needed in either technique or type of material used for this specific situation, to prevent a similar occurrence in the future.

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Remediation of this leak will include the following:

- (1) Pump from the 100 foot zone in I752-14 until water analyses indicate the excursion has been recovered.
- (2) Biweekly, or more often as necessary, sample I752-14 and analyze for the normal monitor well parameters of sodium, chloride, sulfate, alkalinity and conductivity, as well as uranium (U3O8) to ensure that progress is continuing.
- (3) Biweekly, or more often as necessary, sample 752b and 752c which are down gradient, to ensure containment of the excursion. Analyze for conductivity only.
- (4) The goal of this remediation will be to return the waters in the affected area to baseline conditions, or to a quality consistent with original use or uses as determined by the NDEQ and the NRC.
- (5) Results of the remediation process will be summarized and reported to the NDEQ on a quarterly basis, in conjunction with the Mining Monitoring Report (MMR) which will be forwarded to the NRC in the Semiannual Radiological Effluent and Environmental Monitoring Report.

If you need any additional information regarding this well, please contact me.

Sincerely,

Leland Huffman
Wellfield Engineer

Attachments

cc: Ross Scarano - Region IV
Stephen Collings
Rhonda Grantham

Crow Butte Resources, Inc.
Crow Butte Project

[1] G.L. = Ground level elevation; TOC = Top of Casing; all measurements in FEET; Yelo. = Yelomine casing.
* Estimated coordinates.

Table 2

**Water Analyses through January 30, 1997
Pumping from Well I752-14
and Mine Unit 5 Shallow Monitor Wells in the Vicinity**

Crow Butte Resources, Inc.
Crow Butte Project

Sample Location	Sample Date	Time if Multiple Daily Samples	Sampling Method	U3O8 (ppm)	Na (ppm)	Cl (ppm)	SO4 (ppm)	Conductivity (umhos / cm)	Alkalinity (ppm)
sm5-2	Baseline Average	---	---	0.014	97.33	7.43	32.43	477.67	198.33
sm5-2	23-Dec-96	---	pump jack	---	100	3.1	33	460	180
sm5-2	07-Jan-97	---	pump jack	---	101	3.4	32	450	190
sm5-2	21-Jan-97	-	pump jack	---	100	3.9	33	450	190
sm5-15	Baseline Average	---	---	0.009	129	31.83	53.33	633	213.33
sm5-15	19-Nov-96	---	pump jack	---	127	18	51	580	200
sm5-15	31-Dec-96	---	pump jack	---	128	18	51	580	200
sm5-15	14-Jan-97	---	pump jack	---	127	17	53	570	200
sm5-16	Baseline Average	---	---	0.011	102.33	9.83	39.33	496.67	196
sm5-16	19-Nov-96	---	pump jack	---	101	5.8	38	470	180
sm5-16	31-Dec-96	---	pump jack	---	102	5.8	38	460	180
sm5-16	14-Jan-97	---	pump jack	---	102	6.2	39	470	180
I752	03-Dec-96	12:40 PM	jet pump	1.3	410	228	389	2130	370
I752	04-Dec-96	01:38 PM	jet pump	1.3	390	232	374	2120	350
I752	05-Dec-96	02:40 PM	jet pump	---	---	---	---	2090	---
I752	06-Dec-96	03:05 PM	jet pump	---	---	---	---	2080	---
I752	09-Dec-96	03:32 PM	jet pump	---	---	---	---	1867	---
I752	10-Dec-96	03:06 PM	jet pump	---	---	---	---	1868	---
I752	11-Dec-96	03:05 PM	jet pump	---	---	---	---	1705	---
I752	12-Dec-96	02:51 PM	jet pump	0.9	297	178	284	1695	310
I752	13-Dec-96	02:50 PM	jet pump	---	---	---	---	1773	---
I752	16-Dec-96	03:05 PM	jet pump	---	---	---	---	1680	---
I752	19-Dec-96	09:35 AM	jet pump	---	---	---	---	1244	---
I752	27-Dec-96	02:20 PM	jet pump	---	---	---	---	1164	---
I752	30-Dec-96	01:15 PM	jet pump	---	---	---	---	1379	---
I752	31-Dec-96	---	jet pump	---	---	---	---	1469	---
I752	02-Jan-97	---	jet pump	0.7	209	127	194	1330	290
I752	03-Jan-97	---	jet pump	---	---	---	---	1240	---
I752	06-Jan-97	---	jet pump	---	---	---	---	1125	---
I752	07-Jan-97	---	jet pump	---	---	---	---	1025	---
I752	08-Jan-97	---	jet pump	---	---	---	---	992	---
I752	09-Jan-97	---	jet pump	---	---	---	---	945	---
I752	13-Jan-97	---	jet pump	---	---	---	---	826	---
I752	14-Jan-97	---	jet pump	---	---	---	---	853	---
I752	15-Jan-97	---	jet pump	---	---	---	---	821	---
I752	16-Jan-97	---	jet pump	0.3	97	47	75	795	250
I752	17-Jan-97	---	jet pump	---	---	---	---	732	---
I752	20-Jan-97	---	jet pump	---	---	---	---	770	---
I752	21-Jan-97	---	jet pump	---	---	---	---	752	---
I752	22-Jan-97	---	jet pump	---	---	---	---	745	---
I752	23-Jan-97	---	jet pump	0.2	83	39	71	722	240
I752	24-Jan-97	---	jet pump	---	---	---	---	700	---

Table 2

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and Mine Unit 5 Shallow Monitor Wells in the Vicinity**

**Crow Butte Resources, Inc.
Crow Butte Project**

Sample Location	Sample Date	Time if Multiple Daily Samples	Sampling Method	U3O8 (ppm)	Na (ppm)	Cl (ppm)	SO4 (ppm)	Conductivity (umhos / cm)	Alkalinity (ppm)
I752	27-Jan-97	---	jet pump	---	---	---	---	659	---
I752	28-Jan-97	---	jet pump	---	---	---	---	653	---
I752	29-Jan-97	---	jet pump	---	---	---	---	656	---
I752	30-Jan-97	---	jet pump	0.2	72	29	51	665	240
752b	16-Dec-96	08:50 AM	bailer	0.3	59	51	10	617	210
752b	19-Dec-96	---	bailer	0.1	58	52	10	615	220
752b	26-Dec-96	---	bailer	---	---	---	---	652	---
752b	02-Jan-97	---	bailer	---	---	---	---	629	---
752b	09-Jan-97	---	bailer	---	---	---	---	614	---
752b	16-Jan-97	---	bailer	---	---	---	---	611	---
752b	23-Jan-97	---	bailer	---	---	---	---	613	---
752b	30-Jan-97	---	bailer	---	---	---	---	619	---
752c	16-Dec-96	09:00 AM	bailer	0.3	46	30	9	520	210
752c	19-Dec-96	---	bailer	0.2	52	39	9.5	533	210
752c	26-Dec-96	---	bailer	---	---	---	---	526	---
752c	02-Jan-97	---	bailer	---	---	---	---	503	---
752c	09-Jan-97	---	bailer	---	---	---	---	470	---
752c	16-Jan-97	---	bailer	---	---	---	---	469	---
752c	23-Jan-97	---	bailer	---	---	---	---	461	---
752c	30-Jan-97	---	bailer	---	---	---	---	460	---

Table 3

Water Recovery History through January 29, 1997 Pumping from Well I752-14

Crow Butte Resources, Inc.
Crow Butte Project

Pumping Well	Date	Conductivity of Recoverd Solutions (umhos / cm)		Time Pumping During Period (minutes)	Average Daily Flowrate (GPM)	Daily Volume Recovered (gallons)	Cumulative Volume Recovered (gallons)	Comments
		Morning	Afternoon					
I752	02-Dec-96	---	---	310	0.25	257	257	First start up of JP-5 1/2hp Grundfos Jet Star pump.
I752	03-Dec-96	---	2130	288	1.75	344	601	First sample taken.
I752	04-Dec-96	---	2120	415	5	464	1,065	Second confirming sample taken.
I752	05-Dec-96	---	2090	426	1	492	1,557	
I752	06-Dec-96	---	2080	440	6	419	1,976	
I752	09-Dec-96	---	1867	370	5.5	611	2,587	
I752	10-Dec-96	1874	1868	391	2	385	2,972	
I752	11-Dec-96	---	1705	433	4.5	480	3,452	
I752	12-Dec-96	1695	1743	416	4.5	402	3,854	
I752	13-Dec-96	1780	1773	415	3.5	660	4,514	
I752	16-Dec-96	1778	1680	385	2.5	482	4,996	
I752	19-Dec-96	1244	---	180	1.5	200	5,196	
I752	20-Dec-96	---	1607	223	2.25	362	5,558	
I752	27-Dec-96	---	1164	200	1	88	5,646	Wired to wh14. Some pump problems.
I752	30-Dec-96	---	1379	1188	3	1233	6,879	Removed 5' stinger from pipe. Begin continuous pumping.
I752	31-Dec-96	1530	1469	1440	1	1440	8,319	Continuous pumping to I752a since 12-30-96.
I752	01-Jan-97	---	---	1440	1	1440	9759	Continuous pumping to I752a since 12-30-96.
I752	02-Jan-97	1333	---	1440	1	1440	11199	Continuous pumping to I752a since 12-30-96.
I752	03-Jan-97	1240	---	4320	1	3780	14979	Continuous pumping to I752a since 12-30-96.
I752	06-Jan-97	1125	---	1440	0.75	1415	16394	Continuous pumping to I752a since 12-30-96.
I752	07-Jan-97	1025	---	1440	1	1440	17834	Continuous pumping to I752a since 12-30-96.
I752	08-Jan-97	992	---	1440	1	1440	19274	Continuous pumping to I752a since 12-30-96.
I752	09-Jan-97	945	---	5760	1	5040	24314	Continuous pumping to I752a since 12-30-96.
I752	13-Jan-97	826	---	1440	0.75	990	25304	Continuous pumping to I752a since 12-30-96.
I752	14-Jan-97	853	---	1440	0.625	1281	26585	Continuous pumping to I752a since 12-30-96.

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Pumping from Well I752-14**

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Crow Butte Project

Pumping Well	Date	Conductivity of Recoverd Solutions (umhos / cm)		Time Pumping During Period (minutes)	Average Daily Flowrate (GPM)	Daily Volume Recovered (gallons)	Cumulative Volume Recovered (gallons)	Comments
		Morning	Afternoon					
I752	15-Jan-97	821	---	1440	0.75	1420	28005	Continuous pumping to I752a since 12-30-96.
I752	16-Jan-97	795	---	110	1	110	28115	Valve left closed after sampling; no flow till 1-17-97.
I752	17-Jan-97	732	---	4067	0.875	4050	32165	Restart continuous pumping to I752a.
I752	20-Jan-97	770	---	1388	1	1388	33553	Continuous pumping to I752a since 1-17-97.
I752	21-Jan-97	752	---	1440	1	1368	34921	Continuous pumping to I752a since 1-20-97.
I752	22-Jan-97	745	---	1440	0.9	1434	36355	Continuous pumping to I752a since 1-20-97.
I752	23-Jan-97	722	---	1440	1.1	1692	38047	Continuous pumping to I752a since 1-20-97.
I752	24-Jan-97	700	---	4320	1.25	4860	42907	Continuous pumping to I752a since 1-20-97.
I752	27-Jan-97	659	---	993	1	868	43775	Packer deflated, quit pumping. Back on line ~1427 hrs.
I752	28-Jan-97	653	---	1440	0.75	1430	45205	I752 pumping continuously from 1-27-97.
I752	29-Jan-97	656	---	1072	1	939	46144	Shut off to fix packer~0714 hrs. Back on line by~1322 hrs.