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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Mr. J. G. Themelis
Grand Junction Office
U.S. Department of Energy
P. O. Box 2567
Grand Junction, CO 81502

Dear Mr. Themelis:

Enclosed for your information is an Edgemont Cleanup Action Program Status Report. It summarizes the results of the Battelle Pacific Northwest Laboratories' radiological surveys through April, 1981.

If you have any comments or questions, please contact me or Greg Eadie at 301-427-4103.

Sincerely,

Harry J. Pettengill

Harry J. Pettengill, Section Leader
Operating Facilities Section II
Uranium Recovery Licensing Branch
Division of Waste Management



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MEMORANDUM FOR: John B. Martin, Director
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

FROM: Ross A. Scarano, Chief
Uranium Recovery Licensing Branch
Division of Waste Management

SUBJECT: 2ND STATUS REPORT - EDGEMONT CLEANUP (331162)

The NRC has contracted with the Battelle Pacific Northwest Laboratories (PNL) to conduct radiological surveys to determine the extent of usage of uranium mill tailings at off-site properties in the vicinity of Edgemont, South Dakota. PNL operates a mobile laboratory which facilitates the collection and analysis of grab radon progeny samples (i.e., the Working Level measurement). Also, extensive gamma radiation surveys, and soil sampling and analysis are being conducted at each property. The need to conduct remedial action (i.e., the cleanup of residual radioactive materials) will be determined based on standards established by the U.S. EPA in 40 CFR 192 - "Proposed Cleanup Standards for Inactive Uranium Processing Sites".

Enclosure 1 summarizes the results of the PNL radiological surveys through April, 1981. In sum, 71 structures and 7 vacant lots fail to meet the EPA standards due to gamma radiation levels greater than 20 μ R/hr above background or radium-226 in soil content greater than 5 pCi/g. To date, at least 184 structures will require long-term radon progeny sampling based on the EPA criteria that there is the need for remedial action if the annual average working level exceeds 0.015 WL.

Additionally, the U.S. Department of Housing and Urban Development (HUD) has required that grab Working Level sampling be conducted in any structure in Edgemont before federal financial assistance will be approved. PNL is also conducting these surveys. Results to date indicate that 60 structures fail the HUD criterion of having less than 0.033 WL (i.e., 0.02 Weighted Working Levels).

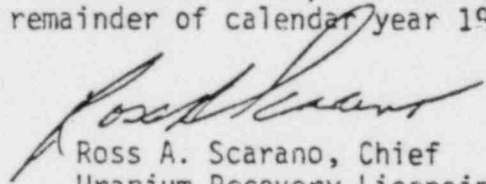
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The PNL work is progressing well. Radiological surveys have been conducted in 515 structures, but surveys have yet to be completed in the remaining 46 structures where the homeowner/occupant has requested the PNL surveys. PNL is also preparing to complete engineering assessments at the 71 properties known to date to exceed the EPA standards. (During the summer of 1980, the ARIX Corporation completed engineering assessments at 23 other properties.) PNL estimates that the total number of structures which will require an engineering assessment may be about 125.

On January 21-22, 1981, the NRC sponsored a "Workshop on Radiological Surveys in Support of the Edgemont Cleanup Action Program" which was attended by representatives of the DOE, EPA, HUD, and several of the DOE national laboratories. The Workshop Report has been finalized and will be issued as NUREG/CR-2083 (see Enclosure 2).

In order to eliminate the need for continuing to conduct long-term RPISU type of sampling to determine the annual average Working Level, PNL is preparing a survey protocol "to locate residual radioactivity at a property". The purpose of such a survey shall be to ascertain with a high degree of certainty that any amount of residual radioactivity having an average radium-226 content greater than 5 pCi/g will be detected, whether such material is physically located within a structure or buried out-of-doors on the property. This new survey technique will combine the presently used gamma radiation survey method (both indoors and outdoors) with a more extensive soil core sampling or bore-hole logging technique. Also, PNL has already initiated a year-long cross-calibration study comparing the results of the Track Etch Device with RPISU sampling. In order to complete the remaining radiological and engineering assessments, PNL will continue to keep a field team of scientists in Edgemont for the remainder of calendar year 1981.



Ross A. Scarano, Chief
Uranium Recovery Licensing Branch
Division of Waste Management

Enclosures:
As stated

Edgemont Cleanup Action Program

Monthly Report Summary for April, 1981

I. Structures surveyed by Grab Working Level Measurements

Total Number of Available Structures: 658

Number of Requests for Survey Received: 561

Summary Table of NRC/State Program²

	<u>Less Than 0.01 WL</u>	<u>0.01 to 0.033 WL</u>	<u>Greater Than³ 0.033 WL</u>	<u>Number of⁴ Retests</u>
Oct. 1, 1980	7 (2) ⁵	20 (2)	0	8 RRWL, 4 RRTO
Nov. 1, 1980	33 (4)	56 (11)	1 (1)	19 RRWL, 31 RRTO
Dec. 1, 1980	21 (7)	40 (4)	24 (4)	9 RRWL, 19 RRTO
Jan. 1, 1981	8 (2)	21 (3)	3 (0)	6 RRWL, 4 RRTO
Feb. 1, 1981	4 (0)	15 (3)	6 (0)	1 RRWL, 3 RRTO
March 1, 1981	10 (2)	24 (3)	2 (0)	5 RRWL, 8 RRTO
April 1, 1981	6 (2)	11 (0)	7 (1)	0 RRWL, 4 RRTO
May 1, 1981	<u>29 (9)</u>	<u>21 (6)</u>	<u>7 (2)</u>	<u>0 RRWL, 3 RRTO</u>
Totals:	<u>118 (28)</u>	<u>208 (32)</u>	<u>50 (8)</u>	<u>48 RRWL, 76 RRTO</u>
Revised Totals ⁷	110 (21)	221 (37)	60 (13)	

II. Vacant Land Gamma Radiation Surveys

Total Number of Available Lots: 388 Lots + 66 Vacant City Blocks¹

Number of Requests for Lot Survey Received: 320 Lots + 51 Blocks

Summary Table of NRC/State Program⁶

<u>Date</u>	<u>Less Than 14.5 μR/hr Average</u>	<u>Greater Than 14.5 μR/hr Average</u>	<u>Greater Than 5 pCi/gram ²²⁶Ra or Greater Than 34.5 μR/hr Point Reading</u>
October 1, 1980			
November 1, 1980	19	2	
December 1, 1980	8	4	
January 1, 1981	0	0	
February 1, 1981	18	0	
March 1, 1981	6	0	
April 1, 1981	0	0	
May 1, 1981	<u>25</u>	<u>1</u>	<u>7</u>
	<u>76</u>	<u>7</u>	<u>7</u>

- 1 One City block contains approximately 16 lots.
- 2 HUD criterion is that the grab Working Level (WL) times the factor 0.6 equals the Weighted Working Level (WWL) which must be less than 0.02 WWL ($0.033 \text{ WL} \times 0.6 = 0.02 \text{ WWL}$). See the attached flow diagram for the significance of these screening levels. When the verified grab working level measurement is greater than 0.033 WL, the property receives a detailed, engineering assessment to define what remedial action must be taken; otherwise a long-term monitoring program may be conducted to determine if remedial action is required.
- 3 These are based on the average of two measurements.
- 4 RRWL means a single measurement $>0.033 \text{ WL}$ which must be verified. RRTO means turnover time was too short (<32 minutes) which must be retested at least once. These are the numbers of pending reruns generated each period.
- 5 Numbers in parentheses indicate the number of measurements included in the number without parentheses which are slated for engineering assessment due to failure of one or more of the other criteria (i.e. ^{226}Ra in soil $>5 \text{ pCi/g}$, gamma dose rate $>20 \text{ } \mu\text{R/hr}$ above background).
- 6 HUD criterion for Vacant Land is that the average gamma radiation dose rate level must be less than $14.5 \text{ } \mu\text{R/hr}$.
- 7 Revised total as of April 30, 1981 reflects changes in the status of properties caused by rerun analyses. It is based on data taken from the master log.