



ATLAS CORPORATION

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RICHARD E. BLUBAUGH
Vice President of Environmental
and Governmental Affairs

March 08, 1994

Mr. Allan T. Mullins
Licensing Project Manager
Uranium Recovery Branch
U.S. Nuclear Regulatory Commission
Division of Low-Level Waste Management & Decommissioning
NMSS (5 E2)
11555 Rockville Pike
Rockville, MD 20850

Mr. Ramon E. Hall
Director
Uranium Recovery Field Office, Region IV
U.S. Nuclear Regulatory Commission
P.O. Box 25325
Denver, CO 80225

Re: **Atlas Corporation**
Source Material License SUA-917
Docket No. 40-3453 / License Condition No. 48

Dear Messrs. Mullins and Hall:

This letter transmits five copies (to Mr. Mullins) of the results of the effluent and monitoring programs as required by 10 CFR 40.65, and License Condition No. 48. The results and information hereby transmitted are for the second half of 1993. If additional information or clarification is needed regarding the enclosed documents, please contact Mr. Dale Edwards at Atlas' Moab, UT office (801-259-5131).

Sincerely,

Richard E. Blubaugh

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9403250102 940308
PDR ADOCK 04003453
C PDR

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ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLESQuarter: 3rd Quarter 1993Sample Number 51Date of Collection July - Sept.Location of Sampler Northeast of MillName of Sampler Collector D.L. Edwards

Radionuclide	MFC	Concentration uCi/ml	Error Estimate	LLD uCi/ml	MFC	Name & of User
U-235	5×10^{-12} uCi/ml	<u>1.06×10^{-15}</u>		1×10^{-15} uCi/ml	<u>102</u>	<u>Benny</u>
Rn-222	30×10^{-10} uCi/ml			2×10^{-10} uCi/ml		
Pb-210	4×10^{-12} uCi/ml			1×10^{-5} uCi/ml		
Quarter: _____						
Th-230	6×10^{-14} uCi/ml	<u>$2.92 \times 10^{-15} \pm 6.88 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>3.7</u>	<u>Benny</u>
Ra-226	3×10^{-12} uCi/ml	<u>$2.41 \times 10^{-16} \pm 3.27 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.008</u>	<u>Benny</u>
Rn-222	30×10^{-10} uCi/ml	<u>2.4×10^{-9}</u>			<u>80</u>	<u>Tom</u>

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLES

Quarter: 3rd Quarter 1993

Sample Number S-2

Date of Collection July - Sept

Location of Sampler Mill salvage yard

Name of Sampler Collector D.L. Edwards

<u>Radionuclide</u>	<u>MFC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>% MFC</u>	<u>Name &</u> <u>of Assn</u>
U-235	5×10^{-12} uCi/ml	2.39×10^{-15}		1×10^{-16} uCi/ml	<u>.15</u>	<u>Bearing</u>
Rn-222	30×10^{-10} uCi/ml			2×10^{-10} uCi/ml		
Pb-210	4×10^{-12} uCi/ml			1×10^{-8} uCi/ml		
Quarter: _____						
Th-230	8×10^{-14} uCi/ml	$7.11 \times 10^{-17} \pm 3.20 \times 10^{-16}$		1×10^{-16} uCi/ml	<u>.09</u>	<u>Bearing</u>
Ra-226	3×10^{-12} uCi/ml	$3.74 \times 10^{-16} \pm 3.93 \times 10^{-16}$		1×10^{-16} uCi/ml	<u>.01</u>	<u>Bearing</u>
Rn-222	30×10^{-10} uCi/ml	4.8×10^{-9}			<u>160</u>	<u>Termin</u>

ATLANTIC MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLESQuarter: 3rd Quarter 1993Sample Number 53Date of Collection July - Sept.Location of Sampler Northwest of Mill Tailings PondName of Sampler Collector D.L. Edwards

<u>Radionuclide</u>	<u>MPC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>MPC</u>	<u>Name of</u> <u>Person</u>
U-235	6×10^{-12} uCi/ml	<u>2.49×10^{-15}</u>	_____	1×10^{-16} uCi/ml	<u>.05</u>	<u>Burroughs</u>
Rn-222	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Pb-210	4×10^{-12} uCi/ml	_____	_____	1×10^{-5} uCi/ml	_____	_____
Quarter: _____						
Th-230	6×10^{-14} uCi/ml	<u>$2.38 \times 10^{-15} \pm 5.93 \times 10^{-16}$</u>	_____	1×10^{-16} uCi/ml	<u>3.0</u>	<u>Burroughs</u>
Ra-226	3×10^{-12} uCi/ml	<u>$2.57 \times 10^{-16} \pm 3.56 \times 10^{-16}$</u>	_____	1×10^{-16} uCi/ml	<u>.009</u>	<u>Burroughs</u>
Rn-222	30×10^{-10} uCi/ml	<u>2.4×10^{-9}</u>	_____	_____	<u>80</u>	<u>Tenadic</u>

ATLANTIC MINERALS

MOAB MINE

REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLESQuarter: 3rd Quarter 1993Sample Number .54Date of Collection July - Sept.Location of Sampler Amber HeadquartersName of Sampler Collector D.L. Edwards

<u>Radionuclide</u>	<u>MPC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>ULO</u> <u>uCi/ml</u>	<u>MPC</u>	<u>Name</u> <u>of Assn</u>
U-235	3×10^{-12} uCi/ml	<u>1.74×10^{-15}</u>	_____	1×10^{-15} uCi/ml	<u>.02</u>	<u>Barringer</u>
Rn-222	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Pb-210	1×10^{-12} uCi/ml	_____	_____	1×10^{-5} uCi/ml	_____	_____
Quarter:		_____	_____	_____	_____	_____
Th-230	8×10^{-14} uCi/ml	<u>$5.02 \times 10^{-16} \pm 3.81 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.6</u>	<u>Barringer</u>
Ra-226	3×10^{-12} uCi/ml	<u>$1.41 \times 10^{-16} \pm 3.22 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.005</u>	<u>Barringer</u>
Rn-222	30×10^{-10} uCi/ml	<u>0.9×10^{-9}</u>		_____	<u>30</u>	<u>Frederick</u>

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MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLES

Quarter: 3rd Quarter 1993

Sample Number 56

Date of Collection July - Sept.

Location of Sampler Approximately two miles south of mill

Name of Sampler Collector D. L. Edwards

<u>Radioisotope</u>	<u>MFC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>MFC</u>	<u>Name of</u> <u>Sampler</u>
U-235	8×10^{-12} uCi/ml	<u>3.36×10^{-16}</u>	_____	1×10^{-16} uCi/ml	<u>.01</u>	<u>Barrage</u>
Rn-222	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Pb-210	4×10^{-12} uCi/ml	_____	_____	1×10^{-5} uCi/ml	_____	_____
Quarter: _____						
Th-230	8×10^{-14} uCi/ml	<u>1.08×10^{-15}</u>	<u>$\pm 3.86 \times 10^{-16}$</u>	1×10^{-16} uCi/ml	<u>1.4</u>	<u>Barrage</u>
Ra-226	3×10^{-12} uCi/ml	<u>5.51×10^{-17}</u>	<u>$\pm 2.76 \times 10^{-16}$</u>	1×10^{-16} uCi/ml	<u>1.002</u>	<u>Barrage</u>
Rn-222	30×10^{-10} uCi/ml	<u>0.9×10^{-9}</u>	_____	_____	<u>30</u>	<u>Terrace</u>

ATLANTIC MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLESQuarter: 4th Quarter 1993Sample Number 51Date of Collection Oct. - Dec.Location of Sampler Northeast of millName of Sampler Collector D.L. Edwards

Radionuclide	MPC	Concentration uCi/ml	Error Estimate	LLD uCi/ml	% MPC	Name of Sampler
U-235	8×10^{-12} uCi/ml	<u>5.99×10^{-16}</u>	_____	1×10^{-16} uCi/ml	<u>.012</u>	<u>Bairing</u>
Rn-222	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Pb-210	4×10^{-12} uCi/ml	_____	_____	1×10^{-8} uCi/ml	_____	_____
Quarter:		_____	_____	_____	_____	_____
Th-230	6×10^{-14} uCi/ml	<u>$3.22 \times 10^{-16} \pm 2.58 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.40</u>	<u>Bairing</u>
Ra-226	3×10^{-12} uCi/ml	<u>$2.09 \times 10^{-16} \pm 2.90 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.007</u>	<u>Bairing</u>
Rn-222	30×10^{-10} uCi/ml	<u>42×10^{-10}</u>		_____	<u>140</u>	<u>Tercede</u>

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REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLING

Quarter: 4th Quarter 1993

Sample Number 52

Date of Collection Oct. - Dec.

Location of Sampler Mill salvage yard

Name of Sampler Collector D.L. Edwards

<u>Radionuclide</u>	<u>MFC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>MFC</u>	<u>Name of</u> <u>Person</u>
U-235	8×10^{-12} uCi/ml	<u>1.90×10^{-15}</u>	_____	1×10^{-15} uCi/ml	<u>1.038</u>	<u>Barringer</u>
Ra-226	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Ra-228	4×10^{-12} uCi/ml	_____	_____	1×10^{-8} uCi/ml	_____	_____
Quarter:	_____	_____	_____	_____	_____	_____
Tl-230	8×10^{-14} uCi/ml	<u>$8.21 \times 10^{-16} \pm 3.78 \times 10^{-16}$</u>	_____	1×10^{-16} uCi/ml	<u>1.03</u>	<u>Barringer</u>
Ra-226	3×10^{-12} uCi/ml	<u>$2.86 \times 10^{-17} \pm 2.47 \times 10^{-16}$</u>	_____	1×10^{-16} uCi/ml	<u>.003</u>	<u>Barringer</u>
Rn-222	30×10^{-10} uCi/ml	<u>74×10^{-10}</u>	_____	_____	<u>247</u>	<u>Toward</u>

ATLANTIC MINERALS

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REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLESQuarter: 4th Quarter 1993Sample Number 53Date of Collection Oct. - Dec.Location of Sampler Northwest of Mill Tailings PondName of Sampler Collector D.L. Edwards

<u>Radioisotope</u>	<u>MFC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>% MFC</u>	<u>Name &</u> <u>of Iss</u>
U-235	6×10^{-12} uCi/ml	<u>6.08×10^{-16}</u>	_____	1×10^{-16} uCi/ml	<u>.012</u>	<u>Bairing</u>
Rn-222	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Pb-210	4×10^{-12} uCi/ml	_____	_____	1×10^{-5} uCi/ml	_____	_____
Quarter: _____						
Th-230	6×10^{-14} uCi/ml	<u>$3.05 \times 10^{-16} \pm 2.69 \times 10^{-16}$</u>	<u>1×10^{-16}</u>	1×10^{-16} uCi/ml	<u>.38</u>	<u>Bairing</u>
Ra-226	3×10^{-12} uCi/ml	<u>$1.26 \times 10^{-16} \pm 3.05 \times 10^{-16}$</u>	<u>1×10^{-16}</u>	1×10^{-16} uCi/ml	<u>.004</u>	<u>Bairing</u>
Rn-222	30×10^{-10} uCi/ml	<u>29×10^{-10}</u>	_____	_____	<u>97</u>	<u>Trude</u>

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REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLES

Quarters: 4+6 Quarter 1993

Sample Number 54

Date of Collection Oct. - Dec.

Location of Sampler Archie's Headquarters

Name of Sampler Collector D.L. Edwards

<u>Radioisotope</u>	<u>MPC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>MPC</u>	<u>Name of</u> <u>of Test</u>
U-235	6×10^{-12} uCi/ml	<u>3.87×10^{-16}</u>	_____	1×10^{-16} uCi/ml	<u>0.08</u>	<u>Barrage</u>
Ra-226	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Po-210	4×10^{-12} uCi/ml	_____	_____	1×10^{-5} uCi/ml	_____	_____
Quarters: _____						
Th-230	6×10^{-14} uCi/ml	<u>0</u>	<u>I 0</u>	1×10^{-16} uCi/ml	<u>0</u>	<u>Barrage</u>
Ra-226	3×10^{-12} uCi/ml	<u>0</u>	<u>$\pm 2.14 \times 10^{-16}$</u>	1×10^{-16} uCi/ml	<u>0</u>	<u>Barrage</u>
Ra-222	30×10^{-10} uCi/ml	<u>17×10^{-10}</u>	_____	_____	<u>57</u>	<u>Terrace</u>

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REGULATORY AFFAIRS DEPARTMENT

CONTINUOUS AIR SAMPLESQuarter: 4th Quarter 1993Sample Number 56Date of Collection Oct. - DecLocation of Sampler Approximately two miles south of millName of Sampler Collector D.L. Edwards

<u>Radionuclide</u>	<u>MPC</u>	<u>Concentration</u> <u>uCi/ml</u>	<u>Error</u> <u>Estimate</u>	<u>LLD</u> <u>uCi/ml</u>	<u>MPC</u>	<u>Name</u> <u>of Pass</u>
U^{235}	3×10^{-12} uCi/ml	<u>4.47×10^{-16}</u>	_____	1×10^{-16} uCi/ml	<u>.009</u>	<u>Passing</u>
Ra^{226}	30×10^{-10} uCi/ml	_____	_____	2×10^{-10} uCi/ml	_____	_____
Th^{230}	4×10^{-12} uCi/ml	_____	_____	1×10^{-16} uCi/ml	_____	_____
Quarter:		_____	_____	_____	_____	_____
Th^{230}	6×10^{-14} uCi/ml	<u>$1.32 \times 10^{-16} \pm 2.15 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.17</u>	<u>Passing</u>
Ra^{226}	3×10^{-12} uCi/ml	<u>$4.95 \times 10^{-17} \pm 2.31 \times 10^{-16}$</u>		1×10^{-16} uCi/ml	<u>.002</u>	<u>Passing</u>
Rn^{222}	30×10^{-10} uCi/ml	<u>1.0×10^{-10}</u>		_____	<u>3.3</u>	<u>Trace</u>

ATLAS MINERALS
REGULATORY AFFAIRS DEPARTMENT
DIRECT RADIATION MEASUREMENTS
ENVIRONMENTAL RADGES

3rd Quarter 1973

Date: 7/1/73 to 7/31/73

<u>Location</u>	<u>Exposure Rate</u> <u>mr/Or</u>	<u>Error Estimate</u> <u>mr/Or</u>
1. Continuous Air Monitor #1	<u>18</u>	<u>± 1.8</u>
2. Continuous Air Monitor #2	<u>44</u>	<u>± 4.4</u>
3. Continuous Air Monitor #3	<u>84</u>	<u>± 8.4</u>
4. Continuous Air Monitor #4	<u>26</u>	<u>± 2.6</u>
5. Continuous Air Monitor #6	<u>16</u>	<u>± 2</u>
6. Guard House	<u>105</u>	<u>± 10.5</u>

ATLAS MINERALS
REGULATORY AFFAIRS DEPARTMENT
DIRECT RADIATION MEASUREMENTS
ENVIRONMENTAL BADGES

4th Quarter 1993

Date: 10/1/93 to 12/31/93

	<u>Exposure Rate</u> <u>mr/Or</u>	<u>Error Estimate</u> <u>mr/Or</u>
<u>Location</u>		
1. Continuous Air Monitor #1	<u>18</u>	<u>± 1.8</u>
2. Continuous Air Monitor #2	<u>46</u>	<u>± 2.0</u>
3. Continuous Air Monitor #3	<u>88</u>	<u>± 2.0</u>
4. Continuous Air Monitor #4	<u>26</u>	<u>± 2.0</u>
5. Continuous Air Monitor #6	<u>12</u>	<u>± 1.2</u>
6. Guard House	<u>105</u>	<u>± 2.0</u>

Revised: 5/87

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REGULATORY AFFAIRS DEPARTMENT

RIVER WATER REPORTS

Month 3rd Quarter

Name of Sampler Dale L. Edwards
Date and Time Sample was Collected 9-22-93
Location of Sample Downstream From mill
Sampling Method Used (Bailed-Pumped) Bailed

<u>Radionuclide</u>	<u>M.P.C.</u>	<u>Date of Analysis</u>	<u>Concentration uCi/ml</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-nat	3×10^{-5} uCi/ml	9-22-93	3.7×10^{-9}		8×10^{-10} uCi/ml	DLE

Common Ion and Trace Metals

	<u>Date of Analysis</u>	<u>Concentration</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
Conductivity	9-22-93	1100	10 umhos	DLE

DLE
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ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

RIVER WATER REPORTS

Month 3rd Quarter

Name of Sampler Dale L. Edwards
Date and Time Sample was Collected 9-22-73
Location of Sample Upstream from mill
Sampling Method Used (Bailed-Pumped) Bailed

<u>Radionuclide</u>	<u>M.P.C.</u>	<u>Date of Analysis</u>	<u>Concentration uCi/ml</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-nat	3×10^{-5} uCi/ml	<u>9-22-73</u>	3.7×10^{-9}		8×10^{-10} uCi/ml	DLE

Common Ion and Trace Metals

	<u>Date of Analysis</u>	<u>Concentration</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
Conductivity	<u>9-22-73</u>	<u>1200</u>	10 umhos	DLE

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REGULATORY AFFAIRS DEPARTMENT

RIVER WATER REPORTS

Month 4th Quarter

Name of Sampler Dale L. Edwards
Date and Time Sample was Collected 12-30-73
Location of Sample Upstream from mill
Sampling Method Used (Bailed-Pumped) Bailed

<u>Radionuclide</u>	<u>M.P.C.</u>	<u>Date of Analysis</u>	<u>Concentration uCi/ml</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-nat	3×10^{-5} uCi/ml	<u>12-31-73</u>	4.57×10^{-9}		8×10^{-10} uCi/ml	DLE

Common Ion and Trace Metals

	<u>Date of Analysis</u>	<u>Concentration</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
Conductivity	<u>12-30-73</u>	<u>1300</u>	10 umhos	DLE

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MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

RIVER WATER REPORTS

Month 4th Quarter

Name of Sampler Dale L. Edwards
Date and Time Sample was Collected 12-30-73
Location of Sample Downstream from mill
Sampling Method Used (Bailed-Pumped) Bailed

<u>Radionuclide</u>	<u>M.P.C.</u>	<u>Date of Analysis</u>	<u>Concentration μCi/ml</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-nat	$3 \times 10^{-5} \mu\text{Ci/ml}$	12-31-73	5.64×10^{-7}		$8 \times 10^{-10} \mu\text{Ci/ml}$	DLE

Common Ion and Trace Metals

	<u>Date of Analysis</u>	<u>Concentration</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
Conductivity	12-30-73	1200	10 umhos	DLE

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

3rd QUARTER 1993

well No. AMM-1
 Date and Time Sample was Collected: 9-3-93
 Location of Sample: Northeast Corner of the boundary
 Sampling Method Used (Bailed-Pumped): Pumped
 The Amount of Water to be Removed Prior to Sampling: 480 gal
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L				.0		<i>Browning</i>
U-Nat	4 pCi/L				0.2		<i>Browning</i>
Ra-226	5 pCi/L				0.2		<i>Browning</i>
Ra-228	5 pCi/L				0.9		<i>Browning</i>

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	<u>10/8/93</u>		<u>2060</u>	<u>.05 mg/L</u>		<i>Browning</i>
Cl	<u>10/7/93</u>		<u>3290</u>	<u>1.0 mg/L</u>		<i>Browning</i>
SO ₄	<u>10/7/93</u>		<u>1100</u>	<u>1.0 mg/L</u>		<i>Browning</i>
NO ₃	<u>10/6/93</u>		<u>20.1</u>	<u>0.1 mg/L</u>		<i>Browning</i>
Cr		0.08 mg/L		mg/L		<i>Browning</i>
Pb				mg/L		<i>Browning</i>
Mn		0.05 mg/L		mg/L		<i>Browning</i>
Ni		0.06 mg/L		mg/L		<i>Browning</i>
Ag				mg/L		<i>Browning</i>
V		0.04 mg/L		mg/L		<i>Browning</i>
Se		0.01 mg/L		mg/L		<i>Browning</i>
TDS	<u>8/10-9/17</u>		<u>6710</u>	<u>4 mg/L</u>		<i>Browning</i>
pH	<u>9-3-93</u>		<u>6.83</u>	<u>0.1 units</u>		<i>DLE</i>

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

3rd QUARTER 1993

Well No. AMM-2
 Date and Time Sample was Collected: 7-3-93
 Location of Sample: Between Tailings Pond and River
 Sampling Method Used (Bailed-Pumped): Pumped
 The Amount of Water to be Removed Prior to Sampling: 480 gal
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L				.0		<i>Boering</i>
U-238	4 pCi/L				0.2		<i>Boering</i>
Ra-226	5 pCi/L				0.2		<i>Boering</i>
Ra-228	5 pCi/L				0.9		<i>Boering</i>

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	<u>10/8/93</u>		<u>3640</u>	<u>.05 mg/L</u>		<i>Boering</i>
Cl	<u>10/7/93</u>		<u>2550</u>	<u>1.0 mg/L</u>		<i>Boering</i>
SO ₄	<u>10/7/93</u>		<u>12100</u>	<u>1.0 mg/L</u>		<i>Boering</i>
NO ₃	<u>10/6/93</u>		<u>236</u>	<u>0.1 mg/L</u>		<i>Boering</i>
Cr		0.08 mg/L		mg/L		<i>Boering</i>
Pb				mg/L		<i>Boering</i>
Mo		0.05 mg/L		mg/L		<i>Boering</i>
Ni		0.06 mg/L		mg/L		<i>Boering</i>
Ag				mg/L		<i>Boering</i>
V		0.04 mg/L		mg/L		<i>Boering</i>
Se		0.01 mg/L		mg/L		<i>Boering</i>
TDS	<u>9/16-9/17</u>		<u>19000</u>	<u>1 mg/L</u>		<i>Boering</i>
pH	<u>9/3/93</u>		<u>7.05</u>	<u>0.1 units</u>		<i>DLE</i>

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

3rd QUARTER 1993

Well No. A 1111-3
 Date and Time Sample was Collected: 9-3-93
 Location of Sample: Between Tailings Pond and River
 Sampling Method Used (Bailed-Pumped): ✓ Pumped
 The Amount of Water to be Removed Prior to Sampling: 480 gal
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L				.0		<i>Barringer</i>
U-Nat	4 pCi/L				0.2		<i>Barringer</i>
Ra-226	5 pCi/L				0.2		<i>Barringer</i>
Ra-228	5 pCi/L				0.9		<i>Barringer</i>

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	<u>10/8/93</u>		<u>2920</u>	<u>.05 mg/L</u>		<i>Barringer</i>
Cl	<u>10/7/93</u>		<u>1870</u>	<u>1.0 mg/L</u>		<i>Barringer</i>
SO ₄	<u>10/7/93</u>		<u>6800</u>	<u>1.0 mg/L</u>		<i>Barringer</i>
NO ₃	<u>10/6/93</u>		<u>40.5</u>	<u>0.1 mg/L</u>		<i>Barringer</i>
Cr		0.08 mg/L		mg/L		<i>Barringer</i>
Pb				mg/L		<i>Barringer</i>
Mn		0.05 mg/L		mg/L		<i>Barringer</i>
Ni		0.06 mg/L		mg/L		<i>Barringer</i>
As				mg/L		<i>Barringer</i>
V		0.04 mg/L		mg/L		<i>Barringer</i>
Se		0.01 mg/L		3/L		<i>Barringer</i>
TDS	<u>9/16-9/17</u>		<u>12500</u>	<u>1 mg/L</u>		<i>Barringer</i>
pH	<u>9/3/93</u>		<u>7.05</u>	<u>0.1 units</u>		<i>DLE</i>

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

3rd QUARTER 1993

Well No. ATP-25
 Date and Time Sample was Collected: 9-3-93
 Location of Sample: Between Tailings Pond and River
 Sampling Method Used (Bailed-Pumped): Pumped
 The Amount of Water to be Removed Prior to Sampling: 120 gal
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L				.0		Bearings
U-Nat	4 pCi/L				0.2		Bearings
Ra-226	5 pCi/L				0.2		Bearings
Ra-228	5 pCi/L				0.9		Bearings

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	10/8/93		3800	.05 mg/L		Bearings
Cl	10/7/93		1490	1.0 mg/L		Bearings
SO ₄	10/7/93		17300	1.0 mg/L		Bearings
NO ₃	10/6/93		105	0.1 mg/L		Bearings
Cr		0.08 mg/L		mg/L		Bearings
Pb				mg/L		Bearings
Mn		0.05 mg/L		mg/L		Bearings
Ni		0.06 mg/L		mg/L		Bearings
As				mg/L		Bearings
V		0.04 mg/L		mg/L		Bearings
Se		0.01 mg/L		mg/L		Bearings
TDS	9/16-9/17		24000	4 mg/L		Bearings
pH	9/3/93		7.38	0.1 units		DLE

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

4th QUARTER 1993

Well No. A 7777-1
 Date and Time Sample was Collected: 11-11-93
 Location of Sample: Northeast Corner of the Boundary
 Sampling Method Used (Bailed-Pumped): Pumped
 The Amount of Water to be Removed Prior to Sampling: 480 gal
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L	12/7-12-16	0	± 19	2.0	0	Bearings
U-Nat	4 pCi/L	12/3-12/7	2.3		0.2	58	Bearings
Ra-226	5 pCi/L	12/9-12-13	0.1 ±	0.2	0.3	2.0	Bearings
Ra-228	5 pCi/L	12/30-12/10	0.6 ±	1.5	1.0	12	Bearings

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	12/13/93		2160	.05 mg/L		Bearings
Cl	12/11/93		3010	1.0 mg/L		Bearings
SO ₄	12/11/93		1040	1.0 mg/L		Bearings
NO ₃	12/11/93		< 0.5	0.5 mg/L		Bearings
Cr	12/13/93	0.08 mg/L	< 0.01	.01 mg/L	13	Bearings
Pb	12/13/93		0.1	.02 mg/L		Bearings
Mn	12/13/93	0.05 mg/L	< 0.01	.01 mg/L	20	Bearings
Ni	12/13/93	0.06 mg/L	< 0.01	.01 mg/L	17	Bearings
Ag	12/13/93		< 0.01	.01 mg/L		Bearings
V	12/13/93	0.04 mg/L	< 0.01	.01 mg/L	25	Bearings
Se	12/15/93	0.01 mg/L	0.14	.002 mg/L	140	Bearings
TDS	12/18/93		6660	4 mg/L		Bearings
pH	11/11/93		6.76	0.1 units		DLE

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

4th QUARTER 1993

Well No. AMM-2
 Date and Time Sample was Collected: 11-11-93
 Location of Sample: Between Tailings Pond and River
 Sampling Method Used (Bailed-Pumped): Pumped
 The Amount of Water to be Removed Prior to Sampling: 480
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L	12/7-12/16	1700 ±	250	2.0	5152	Bearings
U-Nat	4 pCi/L	12/3-12-7	2654		0.2	66350	Bearings
Ra-226	5 pCi/L	12/9-12-13	0.2 ±	0.3	0.3	7	Bearings
Ra-228	5 pCi/L	11/30-12/10	1.9 ±	1.6	1.0	38	Bearings

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	12/13/93		4100	.05 mg/L		Bearings
Cl	12/14/93		2300	.10 mg/L		Bearings
SO ₄	12/14/93		11800	.10 mg/L		Bearings
NO ₃	12/14/93		179	.05 mg/L		Bearings
Cr	12/13/93	0.08 mg/L	2.01	.01 mg/L	13	Bearings
Pb	12/13/93		0.1	.02 mg/L		Bearings
Mn	12/13/93	0.05 mg/L	1.22	.01 mg/L	2440	Bearings
Ni	12/13/93	0.06 mg/L	2.01	.01 mg/L	17	Bearings
Ag	12/13/93		2.01	.01 mg/L		Bearings
V	12/13/93	0.04 mg/L	2.01	.01 mg/L	25	Bearings
Se	12/13/93	0.01 mg/L	2.002	.002 mg/L	20	Bearings
TDS	12/18/93		18600	4 mg/L		Bearings
pH	11/11/93		7.15	0.1 units		DLE

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

4116 QUARTER 1993

Well No. A211111-3
 Date and Time Sample was Collected: 11-11-93
 Location of Sample: Between Tailings Pond and River
 Sampling Method Used (Bailed-Pumped): _____
 The Amount of Water to be Removed Prior to Sampling: _____
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L	12/7-12/16	2100 ±	200	2.0	6364	Bearings
U-238	4 pCi/L	12/3-12/7	1957		0.2	48925	Bearings
Ra-226	5 pCi/L	12/9-12/13	0 ±	0.2	0.3	0	Bearings
Ra-228	5 pCi/L	11/30-12/10	1.0 ±	1.1	1.0	20	Bearings

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	12/13/93		3150	.05 mg/L		Bearings
Cl	12/11/93		1800	1.0 mg/L		Bearings
SO ₄	12/11/93		6440	1.0 mg/L		Bearings
NO ₃	12/11/93		< 0.5	0.5 mg/L		Bearings
Cr	12/13/93	0.08 mg/L	< 0.1	.01 mg/L	13	Bearings
Pb	12/13/93		0.2	.02 mg/L		Bearings
Mn	12/13/93	0.05 mg/L	0.11	.01 mg/L	2220	Bearings
Ni	12/13/93	0.06 mg/L	< 0.1	.01 mg/L	17	Bearings
Ag	12/13/93		< 0.1	.01 mg/L		Bearings
V	12/13/93	0.04 mg/L	< 0.1	.01 mg/L	25	Bearings
Se	12/13/93	0.01 mg/L	0.002	.002 mg/L	20	Bearings
TDS	12/18/93		13200	4 mg/L		Bearings
pH	11/11/93		7.16	0.1 units		DLE

ATLAS MINERALS
MOAB MILL
REGULATORY AFFAIRS DEPARTMENT

MONITOR WELL REPORTS

4th QUARTER 1993

Well No. ATP-25
 Date and Time Sample was Collected: 11-11-93
 Location of Sample: Between Tailings Pond and River
 Sampling Method Used (Bailed-Pumped): Pumped
 The Amount of Water to be Removed Prior to Sampling: 120 gal
 Name of Sampler: D. L. Edwards

Radionuclide	Standards	Date of Analysis	Concentration pCi/L	Error Estimate	L.L.D.	% Standard	Name of Assayer
Gross Alpha	33 pCi/L	12/7-12/16	3220 ± 350		2.0	9758	Boering
U-Nat	4 pCi/L	12/3-12/7	4035		0.2	100875	Boering
Ra-226	5 pCi/L	12/9-12/13	0.7 ± 0.4		0.3	14	Boering
Ra-228	5 pCi/L	11/30-12/10	1.7 ± 1.1		1.0	34	Boering

Common Ion and Trace Metals

	Date of Analysis	Standards	Concentration mg/L	L.L.D.	% Standard	Name of Assayer
Na	12/13/93		4160	.05 mg/L		Boering
Cl	12/14/93		1310	10 mg/L		Boering
SO ₄	12/14/93		17000	1.0 mg/L		Boering
NO ₃	12/14/93		85.7	0.5 mg/L		Boering
Cr	12/13/93	0.08 mg/L	<.01	.01 mg/L	13	Boering
Pb	12/13/93		<.02	.02 mg/L		Boering
Mn	12/13/93	0.05 mg/L	1.35	.01 mg/L	2700	Boering
Ni	12/13/93	0.06 mg/L	<.01	.01 mg/L	17	Boering
Ag	12/13/93		<.01	.01 mg/L		Boering
V	12/13/93	0.04 mg/L	<.01	.01 mg/L	25	Boering
Se	12/13/93	0.01 mg/L	.015	.002 g/L	180	Boering
TDS	12/18/93		23100	4 mg/L		Boering
pH	11/11/93		7.41	0.1 units		DLE

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

SOIL SAMPLE

Year 1993

Date of Collection 7-29-93

Location of Sample Collection .51

Type of Sample Soil

Name of Sampler Dale L. Edwards

<u>Radionuclide</u>	<u>Date Sample Analyzed</u>	<u>Concentration uci/g</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-Nat	_____	_____	_____	_____	_____
Ra ²²⁶	<u>8/9-8/10</u>	<u>0.8x10⁻⁶ ±</u>	<u>0.5x10⁻⁶</u>	<u>0.3x10⁻⁶</u>	<u>Barringer</u>
Pb ²¹⁰	<u>8/13-8/27</u>	<u>1.1x10⁻⁶ ±</u>	<u>0.4x10⁻⁶</u>	<u>2.0x10⁻⁶</u>	<u>Barringer</u>
_____	_____	_____	_____	_____	_____

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

SOIL SAMPLE

Year 1993

Date of Collection 7-29-93

Location of Sample Collection S2

Type of Sample Soil

Name of Sampler Walt L. Edwards

<u>Radionuclide</u>	<u>Date Sample Analyzed</u>	<u>Concentration uci/g</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-Nat	_____	_____	_____	_____	_____
Ra ²²⁶	<u>8/9-8/10</u>	<u>$7.6 \times 10^{-6} \pm$</u>	<u>1.4×10^{-6}</u>	<u>0.3×10^{-6}</u>	<u>Bairinger</u>
Pb ²¹⁰	<u>8/13-8/27</u>	<u>$6.9 \times 10^{-6} \pm$</u>	<u>0.6×10^{-6}</u>	<u>2.0×10^{-6}</u>	<u>Bairinger</u>
_____	_____	_____	_____	_____	_____

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

SOIL SAMPLE

Year 1993

Date of Collection 7-27-93

Location of Sample Collection 53

Type of Sample Soil

Name of Sampler Dale L. Edwards

<u>Radionuclide</u>	<u>Date Sample Analyzed</u>	<u>Concentration uci/g</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-Nat	_____	_____	_____	_____	_____
Ra ²²⁶	<u>8/9-8/10</u>	<u>11.0 x 10⁻⁶</u>	<u>+ 2.0 x 10⁻⁶</u>	<u>0.3 x 10⁻⁶</u>	<u>Baillinger</u>
Pb ²¹⁰	<u>8/13-8/27</u>	<u>13.0 x 10⁻⁶</u>	<u>+ 1.0 x 10⁻⁶</u>	<u>3.0 x 10⁻⁶</u>	<u>Baillinger</u>
_____	_____	_____	_____	_____	_____

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

SOIL SAMPLE

Year 1993

Date of Collection 7-27-93

Location of Sample Collection S4

Type of Sample Soil

Name of Sampler Dale L. Edwards

<u>Radionuclide</u>	<u>Date Sample Analyzed</u>	<u>Concentration uci/g</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-Nat	_____	_____	_____	_____	_____
Ra ²²⁶	<u>8/9-8/10</u>	<u>0.7×10^{-6}</u>	<u>$\pm 0.5 \times 10^{-6}$</u>	<u>0.3×10^{-6}</u>	<u>Barringer</u>
Pb ²¹⁰	<u>8/13-8/27</u>	<u>1.7×10^{-6}</u>	<u>$\pm 0.5 \times 10^{-6}$</u>	<u>2.0×10^{-6}</u>	<u>Barringer</u>
_____	_____	_____	_____	_____	_____

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

SOIL SAMPLE

Year 1993

Date of Collection 7-29-93

Location of Sample Collection .56

Type of Sample Soil

Name of Sampler Dale L. Edwards

<u>Radionuclide</u>	<u>Date Sample Analyzed</u>	<u>Concentration uci/g</u>	<u>Error Estimate</u>	<u>L.L.D.</u>	<u>Name of Assayer</u>
U-Nat	_____	_____	_____	_____	_____
Ra ²²⁶	<u>8/9-8/10</u>	<u>0.3X10⁻⁶</u>	<u>± 0.4X10⁻⁶</u>	<u>0.3X10⁻⁶</u>	<u>Ballinger</u>
Pb ²¹⁰	<u>8/13-8/27</u>	<u>1.4X10⁻⁶</u>	<u>± 0.7X10⁻⁶</u>	<u>2.0X10⁻⁶</u>	<u>Ballinger</u>
_____	_____	_____	_____	_____	_____

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

Vegetation ReportYear: 1993Date and Time Collected 6-17-93Location of Sample Pasture near millType of Sample VegetationName of Sampler Dale L. Edwards

<u>Radionuclide</u>	<u>Date of Analysis</u>	<u>$\times 10^{-4}$ uci/kg wt</u>	<u>$\times 10^{-4}$ Error Estimate</u>	<u>L.L.D</u>	<u>Name of Assayer</u>
Ra 226	<u>7/9-7/14</u>	<u>0.15</u>	<u>0.17</u>	<u>0.3×10^{-6} uci/g</u>	<u>Barringer</u>
Pb 210	<u>7/8-7/30</u>	<u>0.93</u>	<u>0.43</u>	<u>2.0×10^{-6} uci/g</u>	<u>Barringer</u>

ATLAS MINERALS

MOAB MILL

REGULATORY AFFAIRS DEPARTMENT

Vegetation Report

Year: 1993

Date and Time Collected 6-17-93

Location of Sample Background

Type of Sample Vegetation

Name of Sampler Dale L. Edwards

<u>Radionuclide</u>	<u>Date of Analysis</u>	<u>uci/kg</u> ^{$\times 10^{-4}$}	<u>Error Estimate</u> ^{$\times 10^{-4}$}	<u>L.L.D</u>	<u>Name of Assayer</u>
Ra ²²⁶	<u>7/7-7-14</u>	<u>.67</u> $\times 10^{-4}$	<u>.28</u> $\times 10^{-4}$	<u>0.3</u> $\times 10^{-6}$ uci/g	<u>Bawinger</u>
Pb ²¹⁰	<u>7/8-7/30</u>	<u>1.5</u> $\times 10^{-4}$	<u>.9</u> $\times 10^{-4}$	<u>2.0</u> $\times 10^{-6}$ uci/g	<u>Bawinger</u>