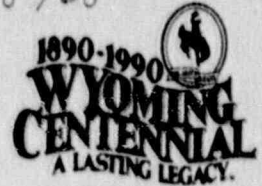


04008768820E

40-8768



THE STATE OF WYOMING

MIKE SULLIVAN
GOVERNOR

RETURN ORIGINAL TO PDR, HQ.

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

Administration
(307) 777-7937Air Quality Division
(307) 777-7391Land Quality Division
(307) 777-7756
FAX (307) 634-0799Solid Waste Management Program
(307) 777-7752Water Quality Division
(307) 777-7781

April 30, 1990

Paul Michaud
US NRC
Uranium Recovery Field Office
P.O. Box 25325
Denver, CO 80225

RE: Rio Algom, Permits 304C, 5RD, 13RD

Dear Paul:

In response to our telephone conversation today, I am enclosing information regarding Rio Algom's bonds. (Photographs did not xerox well and are not included).

The current bonds that we hold in Rio Algom's name, are as follows:

5RD	(Q Sand) - \$109,100
13RD	(O Sand) - \$157,000
304C	- \$902,300

Please contact me if you require further information or have questions regarding this matter.

Sincerely,

Patrick Baumann
District I Senior Analyst
Land Quality Division

PB/sjm
Enclosures

9006180370 900430
PDR ADOCK 04008768
C PDC

DESIGNATED ORIGINAL

Certified By Mary C. Hood



RF-02
11
Add Info
90-0550

RIO ALGOM MINING CORPORATION

305 WATERFORD BOULEVARD, SUITE 325
OKLAHOMA CITY, OKLAHOMA 73118

March 31, 1989

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Mr. Roy Spears
Wyoming Department of Environmental Quality
Land Quality Division
401 West 19th Street
Cheyenne, WY 82002



*See inspection
files for each
permit
8-1584*

RE: Annual Reports
Permits 304C-R1, 5RD, 13RD

Dear Mr. Spears:

Enclosed are Rio Algom Mining Corp.'s Annual Mining and Reclamation Reports for the annual report period ending March, 1989, for Permits 304C-R1, 5RD and 13RD.

Mining operations remained suspended during the past year at the Bill Smith Underground Mine. Reclamation of the open pit areas is continuing and will be completed in 1989, except for re-establishing vegetation. Solution mining operations continued at the "O" Sand project (Permit 13RD) during the report period.

Reclamation cost estimates for each project have been prepared and are attached to the respective reports. Reclamation bonds will be adjusted as needed after DEQ review and approval of the new cost estimates.

Please call me if you have any questions.

Sincerely,

Martin D. Freeman
Martin D. Freeman
Vice President

MDF:km
Enclosures

xc: Bureau of Land Management
Attn: Ed Coy
951 North Poplar
Casper, WY 82601

**LAND QUALITY DIVISION
RECEIVED MAR 31 1989
PERMIT 304C 5RD 13RD**

ANNUAL MINING AND RECLAMATION REPORT
SEQUOYAH FUELS "O" SAND PROJECT
SECTION 26, T36N, R74W
CONVERSE COUNTY, WYOMING
MARCH 21, 1989

1. Company Name Rio Algom Mining Corp.
Address P. O. Box 570 Douglas, Wyoming 82633
Mining Permit No. 13RD, Mineral Mined Uranium
Date of Permit Issuance 5-14-84, Date of Report Filing 3-31-89
2. Time period covered by this report:
March 1988 to March 1989
3. Number of acres affected by activities during the report period: 0
4. Total number of acres affected to date by mining and related activities under permit and all amendments: (6.0)*
5. Number of acres graded and contoured during the report period: 0
6. Number of acres topsoiled during the report period: 0
7. Number of acres seeded during the report period: 0
8. Number of acres graded, topsoiled and seeded to date: (5.8)*
9. (a.) Type of seed used for seeding during the report period:
None

*Prior to startup of the "O" sand project, affected acreage for the pipeline and wellfield was included as part of Permit 304C. The acreage continues to be carried in Permit 304C.

LAND QUALITY DIVISION
RECEIVED MAR 31 1989

Annual Mining and Reclamation Report
March 21, 1989

10. Depth of redistributed topsoil in seeded areas: None
11. Water impoundments constructed during report period: None
12. Results of previous vegetation efforts: Fair to good cover
13. Description of:
- (a.) Pit stability problems: Not Applicable
- (b.) Surface or groundwater conditions:
- Fluid production and injection during calendar year 1988 totaled 70.7 million gallons and 67.7 million gallons, respectively. Overrecovery totaled 3.0 million gallons, averaging approximately 5.7 GPM.
- (c.) Slope angles on graded and contoured areas: Not Applicable
- (d.) Areas of slumping or sliding: None
- (e.) Newly constructed drainage patterns: None
- (f.) Newly constructed drainage or diversion ditches: None
- (g.) Road construction, culvert and bridge construction: None
14. Activities for the coming year:
- Continue the existing insitu leaching program.
15. Details of next year's mining and reclamation plans:
- Continue the existing leaching program. Final reclamation of the O-Sand wellfield will be deferred and completed as per the conditions of the commercial license.
16. Summary of reclamation costs for the report period: None

LAND QUALITY DIVISION
RECEIVED MAR 31 1989
PERMIT 304 5RD 13RD

17. Estimated Reclamation Costs (Table C-1)

I. Recovery Plant Facilities	\$ 13,200
II. Groundwater Restoration	113,200
III. Wellfield Reclamation	8,400
IV. Evaporation Pond Reclamation	18,800
V. Adjust Costs to 1989 Costs	6,100
VI. Overhead & Management	9,600
VII. Contingency	<u>25,400</u>
TOTAL	<u>\$ 194,700</u>

18. Quantity of overburden removed: Not Applicable

19. Quantity (tons) of commodity "mined" during the report
period and total to date: Not Applicable

20. Results of monitoring and research activities:

There were no excursions during the report period. See attached tables for monitor well upper control limit parameter data - Tables A-1 thru A-6. Monitor well fluid level data are included on Table B-1.

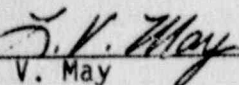
21. Subsidence information:


There have been no evidences of surface subsidence related to this project during this reporting period.

22. Attached maps:

(a.) Central Unit South Powder River (1"=500')

Report Prepared By:


L. V. May
Mine Superintendent


D. L. Alberts
Administrative Supervisor

LAND QUALITY DIVISION

RECEIVED MAR 31 1989

DEPT. OF ENVIRONMENT & NATURAL RESOURCES

TABLE A-1
MONITOR WELL OM-1, OM-2 EXCURSION PARAMETERS DATA
C-SAND ISL PROJECT SPRB, WYOMING

DATE	OM-1					OM-2				
	(1) HCO3	CL	SO4	SP.COND	*	HCO3	CL	SO4	SP.COND	*
UCL	283	17	345	1018	*	304	18	345	1032	*
07-Jan-87	237	6	250	806	*	237	5	275	847	*
21-Jan-87	244	8	211	920	*	244	8	227	920	*
04-Feb-87	269	5	260	833	*	262	5	280	853	*
18-Feb-87	259	6	290	849	*	250	6	300	890	*
04-Mar-87	256	7	260	919	*	256	7	275	929	*
18-Mar-87	244	6	254	860	*	249	7	262	870	*
01-Apr-87	244	6	270	820	*	244	7	290	874	*
15-Apr-87	255	6	275	861	*	255	7	260	872	*
06-May-87	252	6	290	858	*	249	6	295	879	*
20-May-87	258	6	300	844	*	249	6	300	887	*
03-Jun-87	248	5	275	861	*	245	5	275	861	*
17-Jun-87	254	5	260	849	*	251	5	255	869	*
08-Jul-87	254	5	275	846	*	245	5	275	857	*
22-Jul-87	254	5	290	788	*	245	5	275	851	*
12-Aug-87	262	7	274	860	*	256	7	264	880	*
26-Aug-87	252	5	270	834	*	255	5	285	877	*
09-Sep-87	253	4	290	846	*	249	5	275	841	*
23-Sep-87	249	5	280	877	*	249	5	280	866	*
07-Oct-87	249	5	260	776	*	242	5	265	826	*
21-Oct-87	249	5	260	833	*	253	5	250	864	*
04-Nov-87	246	5	275	773	*	240	5	290	820	*
18-Nov-87	251	2	270	890	*	244	3	276	890	*
02-Dec-87	243	4	275	859	*	243	4	290	883	*
16-Dec-87	239	6	266	856	*	239	3	287	871	*
06-Jan-88	243	5	265	839	*	249	5	275	860	*
20-Jan-88	243	4	270	819	*	230	4	275	849	*
03-Feb-88	259	4	265	838	*	253	5	260	816	*
17-Feb-88	255	4	295	845	*	249	5	250	845	*
02-Mar-88	255	4	250	832	*	252	4	260	853	*
16-Mar-88	249	4	275	781	*	249	5	250	853	*
06-Apr-88	244	4	275	854	*	241	4	290	898	*
20-Apr-88	244	4	260	778	*	240	4	270	840	*
04-May-88	247	5	275	833	*	232	4	290	878	*
18-May-88	250	5	280	840	*	235	5	270	846	*
01-Jun-88	247	5	270	886	*	256	5	265	855	*
15-Jun-88	250	5	250	843	*	247	4	270	853	*
06-Jul-88	247	5	250	840	*	243	5	285	830	*
20-Jul-88	265	4	250	888	*	244	5	270	900	*
03-Aug-88	256	5	260	815	*	250	5	290	840	*
17-Aug-88	256	5	275	805	*	250	5	280	870	*
07-Sep-88	256	5	240	780	*	247	5	275	818	*
21-Sep-88	262	4	240	739	*	244	5	260	819	*
05-Oct-88	250	4	250	709	*	244	5	240	800	*
19-Oct-88	247	5	250	673	*	247	5	250	735	*
02-Nov-88	250	4	240	800	*	240	5	265	820	*
16-Nov-88	247	5	260	816	*	238	5	250	837	*
07-Dec-88	232	5	250	798	*	238	5	250	798	*
21-Dec-88	244	5	260	756	*	238	5	250	798	*

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

LAND QUALITY DIVISION

RECEIVED MAR 31 1989

PERMIT 304 5RD 13RD

TABLE A-2
MONITOR W L OM-3, OM-4 EXCURSION PARL TER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	OM-3				*	OM-4			
	(1) HCO3	CL	SO4	SP.COND		HCO3	CL	SO4	SP.COND
UCL	287	17	334	1020	*	275	20	334	952
07-Jan-87	231	5	250	785	*	234	4	250	806
21-Jan-87	229	8	218	890	*	205	7	176	790
04-Feb-87	245	5	260	813	*	240	4	260	793
18-Feb-87	232	6	275	870	*	226	5	260	797
04-Mar-87	232	7	275	897	*	210	6	225	771
18-Mar-87	234	6	262	850	*	224	7	230	780
01-Apr-87	226	6	290	830	*	238	7	250	808
15-Apr-87	233	6	280	882	*	211	7	240	756
06-May-87	233	5	290	879	*	236	6	250	825
20-May-87	218	5	275	876	*	218	5	230	792
03-Jun-87	229	5	290	861	*	235	5	240	798
17-Jun-87	229	5	310	869	*	232	5	240	777
08-Jul-87	235	5	325	857	*	242	5	250	824
22-Jul-87	245	4	295	820	*	248	5	290	799
12-Aug-87	256	8	285	855	*	244	11	272	825
26-Aug-87	249	5	255	866	*	249	5	285	856
09-Sep-87	246	5	260	830	*	243	5	250	810
23-Sep-87	249	5	270	856	*	240	5	260	834
07-Oct-87	236	5	250	800	*	240	5	255	814
21-Oct-87	243	5	240	853	*	246	6	250	853
04-Nov-87	246	5	260	797	*	246	5	260	820
18-Nov-87	237	2	252	834	*	233	3	246	825
02-Dec-87	236	5	250	812	*	217	4	240	741
16-Dec-87	229	4	254	826	*	232	3	260	811
06-Jan-88	243	5	255	828	*	230	5	265	860
20-Jan-88	230	5	250	839	*	223	5	275	829
03-Feb-88	247	5	240	770	*	233	5	250	746
17-Feb-88	237	4	270	834	*	219	4	235	754
02-Mar-88	243	4	275	832	*	237	5	240	790
16-Mar-88	243	4	260	832	*	240	5	260	822
06-Apr-88	238	4	275	876	*	241	4	260	766
20-Apr-88	232	5	280	851	*	250	4	265	799
04-May-88	226	5	300	867	*	226	4	260	855
18-May-88	220	5	300	840	*	226	5	255	799
01-Jun-88	237	4	295	845	*	217	4	220	730
15-Jun-88	237	5	275	822	*	243	4	245	800
06-Jul-88	234	4	275	780	*	240	5	260	820
20-Jul-88	244	5	260	888	*	240	4	240	877
03-Aug-88	247	5	265	830	*	226	4	210	740
17-Aug-88	253	5	265	850	*	244	5	250	840
07-Sep-88	244	4	240	799	*	232	5	250	799
21-Sep-88	244	5	260	819	*	238	5	240	798
05-Oct-88	231	5	270	811	*	231	5	235	788
19-Oct-88	235	5	275	816	*	229	5	230	765
02-Nov-88	232	5	275	840	*	235	4	235	800
16-Nov-88	241	6	280	847	*	241	4	275	826
07-Dec-88	232	7	280	819	*	238	4	230	788
21-Dec-88	238	7	275	851	*	238	4	225	756

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

LAND QUALITY DIVISION
RECEIVED MAR 31 1989

TABLE A-3
MONITOR W L OM-5, OMS-1 EXCURSION PA IETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	OM-5					OMS-1				
	(1) HCO3	CL	SO4	SP.COND	*	HCO3	CL	SO4	SP.COND	
UCL	306	19	328	1012	*	359	22	276	1007	
07-Jan-87	247	5	260	837	*	273	12	225	837	
21-Jan-87	234	9	232	910	*	273	12	192	910	
04-Feb-87	262	5	260	843	*	312	12	275	833	
18-Feb-87	256	6	300	900	*	299	13	250	890	
04-Mar-87	250	6	300	929	*	293	12	250	887	
18-Mar-87	244	6	288	860	*	283	10	210	850	
01-Apr-87	238	6	300	853	*	281	10	230	842	
15-Apr-87	249	6	300	904	*	295	11	240	851	
06-May-87	243	6	300	911	*	292	12	235	836	
20-May-87	249	5	275	897	*	274	11	240	845	
03-Jun-87	248	5	260	872	*	280	11	220	804	
17-Jun-87	260	5	290	869	*	299	13	215	849	
08-Jul-87	248	5	275	879	*	292	12	225	813	
22-Jul-87	245	6	300	840	*	283	12	220	840	
12-Aug-87	256	14	310	905	*	305	18	218	850	
26-Aug-87	245	5	290	909	*	287	10	215	856	
09-Sep-87	249	5	295	841	*	292	11	225	831	
23-Sep-87	253	5	294	888	*	295	12	220	823	
07-Oct-87	249	5	295	864	*	289	12	220	826	
21-Oct-87	249	4	265	895	*	279	12	220	843	
04-Nov-87	256	5	300	867	*	288	12	225	832	
18-Nov-87	253	2	282	880	*	291	8	228	866	
02-Dec-87	243	5	280	824	*	286	12	235	848	
16-Dec-87	244	2	302	901	*	286	9	229	841	
06-Jan-88	236	5	300	849	*	286	12	230	849	
20-Jan-88	240	4	260	879	*	276	11	225	849	
03-Feb-88	248	4	255	816	*	290	12	200	770	
17-Feb-88	255	4	250	845	*	292	12	225	835	
02-Mar-88	243	4	280	874	*	295	11	220	843	
16-Mar-88	249	5	290	873	*	279	12	220	832	
06-Apr-88	238	4	275	843	*	290	11	220	789	
20-Apr-88	238	4	285	862	*	287	11	220	820	
04-May-88	244	4	300	900	*	268	12	220	810	
18-May-88	238	5	300	861	*	280	12	230	809	
01-Jun-88	259	5	295	866	*	295	12	230	855	
15-Jun-88	247	5	300	843	*	292	12	220	822	
06-Jul-88	247	5	290	860	*	273	11	205	820	
20-Jul-88	253	4	300	912	*	287	11	200	854	
03-Aug-88	250	5	255	840	*	293	11	200	820	
17-Aug-88	247	5	300	880	*	293	11	210	860	
07-Sep-88	238	5	275	837	*	275	11	190	799	
21-Sep-88	244	5	275	839	*	280	12	200	819	
05-Oct-88	250	5	240	833	*	280	12	210	833	
19-Oct-88	247	5	235	776	*	287	12	215	806	
02-Nov-88	240	4	275	840	*	280	12	200	800	
16-Nov-88	244	5	265	857	*	275	11	200	816	
07-Dec-88	229	4	260	829	*	271	12	220	798	
21-Dec-88	238	4	250	840	*	275	11	210	788	

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

LAND QUALITY DIVISION

RECEIVED MAR 31 1989

DEPT. OF ENVIRONMENT

TABLE A-4
MONITOR WELL OMW-1, OMM-1 EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	OMW-1					OMM-1				
	(1) HCO3	CL	SO4	SP.COND	*	HCO3	CL	SO4	SP.COND	
UCL	238	16	55	418	*	224	16	104	534	
07-Jan-87	167	4	16	330	*	167	6	66	429	
21-Jan-87	171	7	17	400	*	171	8	52	490	
04-Feb-87	177	4	18	317	*	180	6	64	407	
18-Feb-87	177	5	20	342	*	171	6	72	445	
04-Mar-87	177	5	22	338	*	177	6	68	443	
18-Mar-87	171	7	19	300	*	168	7	64	380	
01-Apr-87	171	6	18	327	*	177	7	66	470	
15-Apr-87	180	6	18	336	*	180	7	60	420	
06-May-87	174	5	20	300	*	174	6	70	407	
20-May-87	174	5	20	348	*	174	6	72	443	
03-Jun-87	178	4	18	331	*	172	6	65	430	
17-Jun-87	181	4	18	320	*	178	7	62	435	
08-Jul-87	175	4	18	308	*	178	7	70	440	
22-Jul-87	175	4	18	315	*	178	7	65	399	
12-Aug-87	183	7	18	295	*	195	9	58	395	
26-Aug-87	174	4	18	346	*	174	7	70	412	
09-Sep-87	177	4	18	327	*	174	6	65	405	
23-Sep-87	174	4	18	336	*	187	6	66	433	
07-Oct-87	177	4	19	344	*	184	6	65	451	
21-Oct-87	177	3	19	333	*	180	6	60	437	
04-Nov-87	171	4	20	334	*	180	6	70	451	
18-Nov-87	173	2	31	319	*	178	3	66	403	
02-Dec-87	164	4	22	353	*	184	5	65	436	
16-Dec-87	134	2	18	308	*	173	11	59	398	
06-Jan-88	171	4	18	342	*	184	5	70	435	
20-Jan-88	171	4	17	339	*	171	6	65	439	
03-Feb-88	181	4	18	304	*	181	5	68	379	
17-Feb-88	179	4	16	312	*	182	5	65	432	
02-Mar-88	170	4	16	343	*	179	6	65	453	
16-Mar-88	173	4	18	335	*	182	5	65	437	
06-Apr-88	174	4	17	306	*	177	5	68	460	
20-Apr-88	159	4	17	326	*	183	5	70	441	
04-May-88	165	4	16	326	*	180	5	70	472	
18-May-88	165	5	16	326	*	177	5	68	426	
01-Jun-88	175	4	15	344	*	188	7	63	458	
15-Jun-88	175	3	15	327	*	195	6	65	432	
06-Jul-88	182	5	15	330	*	188	5	65	430	
20-Jul-88	183	4	20	346	*	201	4	69	484	
03-Aug-88	183	4	22	350	*	189	5	65	450	
17-Aug-88	189	4	20	370	*	195	5	68	460	
07-Sep-88	180	4	18	347	*	189	5	60	447	
21-Sep-88	189	5	20	370	*	189	6	60	459	
05-Oct-88	174	5	18	372	*	189	6	62	450	
19-Oct-88	177	5	18	337	*	189	5	60	429	
02-Nov-88	171	4	18	350	*	189	6	60	445	
16-Nov-88	177	4	18	347	*	183	5	70	449	
07-Dec-88	177	4	19	339	*	174	6	70	434	
21-Dec-88	177	4	18	352	*	183	5	70	452	

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

LAND QUALITY DIVISION
RECEIVED MAR 31 1989

TABLE A-5
MON DR WELLS OMO-1, OT-1
EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING
OMO-1 OT-1

DATE	(1) HCO3	CL	SO4	SP.COND	*	HCO3	CL	SO4	SP.COND
07-Jan-87	186	5	210	649	*	359	15	290	1057
21-Jan-87	183	8	174	760	*	239	8	244	350
04-Feb-87	198	4	220	635	*				
18-Feb-87	189	5	230	704	*	250	4	290	859
04-Mar-87	195	5	240	707	*				
18-Mar-87	173	6	199	660	*	244	17	294	880
01-Apr-87	183	6	220	656	*				
15-Apr-87	187	6	200	694	*	249	9	290	840
06-May-87	174	5	200	643	*				
20-May-87	180	4	190	676	*	236	5	250	845
03-Jun-87	181	4	200	662	*				
17-Jun-87	191	4	200	662	*	254	4	290	849
08-Jul-87	191	5	200	660	*				
22-Jul-87	191	4	225	641	*	242	4	300	840
12-Aug-87	287	6	215	660	*	268	13	284	860
26-Aug-87	187	4	210	672	*	252	7	290	888
09-Sep-87	203	4	215	633	*	253	5	290	831
23-Sep-87	197	4	220	660	*	253	5	290	812
07-Oct-87	180	4	220	651	*	259	5	260	826
21-Oct-87	167	4	180	666	*	253	4	260	874
04-Nov-87	190	4	215	633	*	253	5	300	797
18-Nov-87	190	2	204	687	*	267	3	282	894
02-Dec-87	190	4	210	648	*	233	5	290	706
16-Dec-87	195	3	208	668	*	241	3	284	886
06-Jan-88	190	4	220	663	*	240	5	325	828
20-Jan-88	180	5	220	639	*	243	5	265	819
03-Feb-88	199	4	200	643	*	248	5	255	804
17-Feb-88	194	4	210	634	*	255	4	260	825
02-Mar-88	200	4	220	666	*	237	4	240	812
16-Mar-88	200	4	230	670	*	237	5	260	832
06-Apr-88	183	4	210	657	*	247	4	260	821
20-Apr-88	198	4	210	673	*	250	4	290	820
04-May-88	192	4	220	709	*	232	4	250	889
18-May-88	183	4	220	656	*	235	5	280	851
01-Jun-88	201	5	210	677	*	250	4	265	814
15-Jun-88	191	6	200	653	*	259	4	250	800
06-Jul-88	204	4	200	640	*	247	5	275	830
20-Jul-88	195	5	190	716	*	250	5	260	900
03-Aug-88	198	4	185	670	*	256	5	260	820
17-Aug-88	195	4	200	680	*	259	5	250	850
07-Sep-88	186	4	175	666	*	244	5	250	799
21-Sep-88	192	4	185	669	*	259	4	250	799
05-Oct-88	200	5	175	664	*	244	5	250	822
19-Oct-88	189	5	180	633	*	244	5	250	765
02-Nov-88	195	4	180	660	*	238	5	265	800
16-Nov-88	198	4	190	673	*	244	6	260	816
07-Dec-88	195	4	190	609	*	275	10	260	808
21-Dec-88	198	4	190	636	*	244	5	250	767

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

LAND QUALITY DIVISION
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TABLE A-6
MONITOR WELL WW-109
EXCURSION PARAMETER DATA

(1)				
DATE	HCO3	CL	SO4	Sp.Cond.
18-Jun-85	298	14	74	580
04-Oct-85	298	10	87	690
27-Mar-86	386	45	120	940
10-Apr-86	390	38	125	950
15-Aug-86	278	26	39	680
27-Oct-86	337	24	113	750
09-Feb-87	346	32	119	910
12-May-87	434	41	191	1110
31-Aug-87	400	23	144	952
11-Nov-87	331	16	111	775
28-Mar-88	-	23	68	740
06-Jun-88	342	2	68	765
22-Aug-88	-	29	71	786
24-Oct-88	311	17	76	592

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RECEIVED MAR 31 ,1989
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(1)

ALL ANALYSIS IN MG/L EXCEPT SP.COND. WHICH IS UMHOS/CM

TABLE B-1
O-SAND ISL MONITOR WELL FLUID LEVEL DATA
FEET ABOVE MSL

DATE	(1) OM-1	OM-2	OM-3	OM-4	OM-5	OT-1	OMM-1
17-Jul-85	5164.27	5143.57	5163.98	5165.25	5165.33	5145.45	5187.22
06-Aug-85		5162.76				5162.41	
21-Aug-85	5165.26	5164.23	5165.26	5166.57	5166.02	5163.88	5187.88
18-Sep-85	5164.69	5163.97	5166.05	5167.46	5166.04	5164.18	5189.02
23-Sep-85		5167.78				5165.06	
30-Sep-85		5163.30				5163.75	
16-Oct-85	5164.53	5153.96	5164.74	5165.92	5165.25	5163.16	5189.93
20-Nov-85	5168.28	5164.75	5168.43	5169.48	5169.48	5167.83	5189.63
18-Dec-85	5168.88	5168.41	5166.04	5170.70	5168.37	5168.41	5190.90
15-Jan-86	5170.18	5164.11	5171.09	5172.46	5172.15	5170.72	5192.17
18-Feb-86	5172.28	5172.07	5172.56	5173.84	5173.12	5172.02	5193.06
19-Mar-86	5172.34	5172.07	5172.71	5173.79	5173.22	5172.02	5194.27
16-Apr-86	5174.02	5173.71	5174.56	5175.54	5175.05	5173.75	5195.45
21-May-86	5176.22	5175.80	5175.84	5176.80	5176.77	5175.56	5196.60
18-Jun-86	5177.59	5177.22	5177.50	5178.81	5178.31	5177.53	5197.20
16-Jul-86	5177.94	5177.42	5178.40	5178.56	5178.00	5177.63	5198.27
20-Aug-86	5177.24	5175.57	5176.23	5178.45	5177.84	5176.09	5198.29
17-Sep-86	5177.94	5176.65	5177.70	5179.04	5178.38	5177.53	5199.02
22-Oct-86	5179.56	5178.65	5178.96	5180.33	5180.15	5178.35	5198.62
19-Nov-86	5181.52	5181.12	5181.52	5182.80	5182.43	5181.08	5199.67
17-Dec-86	5183.35	5182.78	5183.66	5184.10	5184.12	5182.76	5200.14
21-Jan-87	5185.74	5183.72	5185.55	5185.54	5185.08	5185.52	5201.13
18-Feb-87	5186.59	5185.92	5186.55	5187.66	5187.06	5185.63	5202.32
18-Mar-87	5187.99	5187.57	5188.00	5189.31	5188.62	5187.53	5203.42
15-Apr-87	5189.43	5188.95	5189.84	5190.82	5190.22	5188.84	5204.02
20-May-87	5191.02	5190.52	5190.39	5191.74	5191.68	5188.63	5205.42
17-Jun-87	5190.62	5189.96	5190.00	5191.74	5191.62	5189.91	5205.42
22-Jul-87	5189.83	5189.14	5189.95	5190.83	5191.75	5189.23	5206.10
26-Aug-87	5189.95	5189.17	5190.22	5191.51	5191.64	5188.99	5205.30
23-Sep-87	5186.34	5185.97	5186.24	5187.91	5187.38	5185.41	5206.79
21-Oct-87	5187.29	5186.35	5186.80	5188.56	5188.23	5187.18	5206.02
18-Nov-87	5188.57	5187.79	5188.59	5189.80	5189.55	5187.85	5205.93
16-Dec-87	5189.29	5188.64	5189.35	5190.61	5190.14	5187.51	5206.19
20-Jan-88	5189.96	5189.16	5190.10	5190.86	5191.03	5189.52	5206.32
17-Feb-88	5189.90	5189.90	5190.82	5191.90	5190.98	5189.49	5207.05
02-Mar-88	5192.26	5190.62	5192.23	5193.41	5193.11	5191.63	5207.50
16-Mar-88	5193.14	5191.50	5192.86	5193.83	5193.72	5192.46	5207.84
20-Apr-88	5194.19	5193.60	5194.30	5195.31	5194.96	5193.63	5208.42
18-May-88	5193.66	5193.17	5193.92	5194.66	5193.91	5198.53	5209.22
15-Jun-88	5193.93	5193.37	5194.13	5195.56	5195.26	5193.57	5208.75
20-Jul-88	5193.07	5191.81	5193.77	5193.89	5193.58	5191.82	5209.27
17-Aug-88	5191.64	5190.97	5191.65	5193.16	5192.73	5191.03	5209.42
21-Sep-88	5191.59	5190.83	5191.59	5192.86	5192.58	5191.03	5209.27
19-Oct-88	5191.34	5191.25	5191.70	5193.26	5193.15	5190.75	5209.30
16-Nov-88	5194.39	5193.72	5194.33	5195.32	5195.23	5193.83	5210.02
21-Dec-88	5195.81	5195.22	5195.99	5197.00	5196.62	5195.29	5210.27

LAND QUALITY DIVISION
RECEIVED MAR 31 1989
PERMIT 304 SRD 1300

T. LE B1 continued

DATE	OMS-1	OMW-1	OMO-1	BAROMETRIC PRESSURE In. Hg	NET PRODUCTION GPM
17-Jul-85	5299.37	5391.86	5164.25	30.04	7.6
21-Aug-85	5299.30	5393.32	5164.50	29.92	8.0
18-Sep-85	5299.18	5391.86	5164.84	29.82	9.5
16-Oct-85	5299.52	5393.42	5166.00	29.90	21.0
20-Nov-85	5298.78	5391.30	5167.99	29.94	6.5
18-Dec-85	5297.43	5391.03	5166.79	30.07	8.9
15-Jan-86	5299.15	5391.74	5170.79	29.70	14.8
18-Feb-86	5297.16	5392.10	5173.25	30.02	11.5
19-Mar-86	5299.35	5391.96	5174.59	29.96	22.3
16-Apr-86	5299.23	5392.06	5174.30	29.68	20.8
21-May-86	5299.17	5392.07	5176.29	29.68	41.6
18-Jun-86	5299.84	5392.81	5177.51	29.91	10.4
16-Jul-86	5300.16	5391.64	5177.59	29.86	14.0
20-Aug-86	5299.85	5391.78	5176.81	30.30	3.2
17-Sep-86	5299.74	5392.54	5177.44	29.94	6.5
22-Oct-86	5298.94	5391.66	5178.69	29.91	3.9
19-Nov-86	5299.89	5392.26	5181.41	29.66	5.9
17-Dec-86	5299.16	5391.58	5183.47	29.90	5.7
21-Jan-87	5300.11	5391.71	5185.54	29.86	0.4
18-Feb-87	5299.56	5392.01	5186.51	29.84	11.2
18-Mar-87	5299.84	5392.21	5188.14	29.41	3.0
15-Apr-87	5299.41	5391.84	5189.13	29.80	4.9
20-May-87	5299.71	5391.44	5186.32	29.72	20.3
17-Jun-87	5299.53	5391.36	5190.85	29.92	8.5
22-Jul-87	5299.87	5391.74	5189.47	29.85	7.7
26-Aug-87	5299.65	5391.45	5188.55	30.04	2.8
23-Sep-87	5299.55	5392.06	5186.59	30.01	7.2
21-Oct-87	5299.86	5392.01	5187.57	29.78	6.7
18-Nov-87	5299.47	5391.79	5188.19	29.89	1.9
16-Dec-87	5299.57	5392.01	5189.25	29.74	32.2
20-Jan-88	5299.56	5391.96	5189.79	29.78	11.1
17-Feb-88	5299.81	5392.11	5190.99	29.76	13.2
02-Mar-88	5298.99	5391.96	5191.99	29.82	7.6
16-Mar-88	5299.83	5392.13	5192.49	29.85	5.9
20-Apr-88	5299.76	5391.86	5193.79	29.56	5.1
18-May-88	5300.06	5392.15	5194.59	29.70	6.8
15-Jun-88	5299.35	5391.50	5194.09	30.04	1.0
20-Jul-88	5299.36	5391.30	5191.99	30.12	3.3
17-Aug-88	5299.71	5391.61	5191.49	30.02	8.1
21-Sep-88	5299.66	5391.92	5191.21	29.83	5.6
19-Oct-88	5299.95	5391.31	5192.99	29.78	10.8
16-Nov-88	5299.96	5392.11	5194.28	29.70	7.9
21-Dec-88	5299.83	5392.26	5195.59	29.78	11.3

LAND QUALITY DIVISION

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PERMIT 204 520 1200

TABLE C-1

RECLAMATION BOND ESTIMATE - 1989
O-SAND SOLUTION MINING PILOT

	<u>\$ (000)</u>
I. <u>RECOVERY PLANT FACILITIES</u>	
A. Contaminated Piping Disposal	
1. Removal (3 man crew - 5 days @ \$11/hr.)	1.3
2. Load & Haul (1 Truck Load @ \$1.5M/load)	1.5
3. Disposal Fee (1 load @ \$1M/load)	1.0
B. Tankage Decontamination and Removal	
1. Decontamination (10 man hr/tank x 15 tanks x \$11/hr)	1.7
2. Removal (3 man crew - 5 days @ \$11/hr)	1.3
3. Small Cherry Picker (20 hrs. @ \$40/hr.)	0.8
4. Survey for Tank Release (15 tanks @ \$50/tank)	0.8
5. Load & Haul for resale value	-
C. Pumps, Filters, Meters, Etc.	
1. Remove and decontaminate - 12 pumps (3 men - 2 days @ \$11/hr.)	0.5
2. Remove miscellaneous pumps, filters (3 men - 2 days @ \$11/hr.)	0.5
3. Load, haul and disposal (partial truckload)	2.0
D. Decontaminate Process Area	
1. Wash down 3600 sq. ft. area @ \$0.50/ft ²	1.8
2. Pump wash down to lined pond for evaporation	-
Sub-Total	<u>\$ 13.2</u>
II. <u>GROUNDWATER RESTORATION</u>	
A. All equipment including EDR on site	-

Annual Mining and Reclamation Report
March 21, 1989

TABLE C-1 (Continued)
RECLAMATION BOND ESTIMATE - 1989
O-SAND SOLUTION MINING PILOT

	<u>\$ (000)</u>
II. <u>GROUNDWATER RESTORATION</u> (Continued)	
B. Aquifer Restoration	
1. Oper. Labor (3 men - 160 hr./mo. x 12 mos. @ \$11/hr)	63.4
2. Chemicals & supplies - \$1,500/mo. x 12 mos.	18.0
3. Electrical power - (55 HP x 8640 hr/yr. x \$0.036/KWH)	17.1
4. Maintenance (\$400/mo. x 12 mos.)	4.8
5. Sampling & monitoring (6 sets x 6 wells x \$125/sample)	4.5
C. Aquifer Stability Monitoring	
1. Sampling (12 man hrs./set x 6 sets x \$11/hr.)	0.9
2. Analysis (6 sets x 6 wells x \$125/sample)	<u>4.5</u>
Sub-Total	\$ 113.2
III. <u>WELL FIELD RECLAMATION</u>	
A. Header building removed (80 hrs. @ \$11/hr.)	0.9
B. Remove power line, transformers, and other well field equipment (120 hrs. @ \$11/hr)	1.3
C. Plug & Cap 24 wells @ \$200/well	4.8
D. Reclaim Surface	
1. Rip & contour header site (Motor grader - 3 hours @ \$80/hr.)	0.2
2. Replace topsoil - 400 cy @ \$1/cy	0.4
3. Disc & seed for stubble (2 ac @ \$65/ac)	0.1
4. Final seeding and fertilizer (2 ac @ \$150/ac)	0.3
5. Revegetation, Bond (2 ac @ \$200/ac)	<u>0.4</u>
Sub-Total	\$ 8.4

LAND QUALITY DIVISION

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Annual Mining and Reclamation Report
March 21, 1989

TABLE C-1 (Continued)
RECLAMATION BOND ESTIMATE - 1989
O-SAND SOLUTION MINING PILOT

	<u>\$ (000)</u>
IV. <u>EVAPORATION POND RECLAMATION</u>	
A. Solids & Liner Disposal	
1. Remove & Load Material (370 cu yds @ \$1.50/yd)	0.6
2. Haul to disposal site (10 loads @ \$1000/load)	10.0
3. Disposal fee (lump sum @ \$5M)	5.0
B. Recontour Pond Site	
1. Dozer (16 hrs. @ \$110/hr.)	1.8
2. Motor Grader (8 hrs. @ \$80/hr.)	0.6
C. Reclaim site	
1. Survey Pond Area	0.3
2. Remove fences	0.5
3. Topsoil & seed (included in 304C Permit)	-
Sub-Total	<u>\$ 18.8</u>
V. <u>ADJUST ABOVE COSTS TO 1989 COSTS</u> (4% of Items I-IV - \$153.6M)	6.1
VI. <u>OVERHEAD & MANAGEMENT</u> (6% of Items I-V - \$159.7M)	9.6
VII. <u>CONTINGENCY</u> (15% of Items I-VI - \$169.3M)	<u>25.4</u>
TOTAL RECLAMATION ESTIMATE	<u>\$ 194.7</u>



THE STATE
MIKE SULLIVAN
GOVERNOR



Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

Administration
(307) 777-7937

Air Quality Division
(307) 777-7391

Land Quality Division
(307) 777-7756
FAX (307) 634-0799

Solid Waste Management Program
(307) 777-7752

Water Quality Division
(307) 777-7781

MEMORANDUM

TO FILE: Bill Smith Uranium Mine, "Permit 304"
FROM: Steve Ingle, Hydrologist⁵¹
DATE: November 9, 1989
SUBJECT: 1989 Annual Report Review

Introduction

Pat Baumann of District I has requested a brief review on October 27, 1989 of the Bill Smith Uranium Mine Permit #304C, 1989 Annual Report. The report was received March 31, 1989.

Discussion

With the exception of the O-Sand solution mining operation (R&D13), mining at the Bill Smith underground mine remained suspended. Except for re-establishing vegetation, the open-pit mines within the permit area were to be completely reclaimed during the summer of 1989. The following comments resulted from review of the annual report.

1. The field sampling protocol section does not indicate that the samples were properly cooled to 4°C.
2. It is indicated in the annual report that groundwater quality samples are acquired either by bailing or by airlifting. It is requested that the sampling procedure for each well be specified. It is further stated that 2 casing volumes are extracted prior to collecting the sample, because airlifting samples can substantially affect the water quality, it is suggested that the sampling technique use a method other than airlifting to obtain a representative sample.
3. It is not stated in the annual report which samples are analyzed for total constituents and which are monitored for dissolved constituents.
4. Wells OWD 2,7,8,9 could not be found on the annual report maps.

5. There are no section numbers on the south area map. Section numbers should be added.
6. Table 1 shows the Deep Observation Wells as being located in R73W. The correct location is in R74W. This should be corrected.
7. In a memo from Phil Pucel to Tony Mancini, dated January 16, 1984, he states that well OWD-4 is completed in both the M and O sands. There is no indication in the files that this well was recompleted in either the M or the O sand. The status of this well should be clarified.
8. The deep monitoring wells all show a substantial rise in water level. Presumably the rise is due to flooding of the Bill Smith underground mine. This cannot be verified because water levels are not taken in the shaft. It would be helpful to have water levels from the underground workings to track the water level recovery.

The preceeding comments and observations can be addressed in the next annual report. During this review the O-Sand annual report was examined. There were no notable occurrences during the reporting period. The bleed rate averaged about 4.4% for the period. Item 15 of the annual report states that final reclamation of the O sand wellfield will be deferred and completed as per the conditions of the commercial license. It should be brought to Rio Algom's attention that the Environmental Quality Act requires that a Research and Development license include a timetable for the accomplishment of the reclamation plan (W.S. 35-11-431(a)(v)). Final reclamation of R&D 13 should not be contingent on the commercial license. The commercial license application (TFN 2 6/99) was declared complete November 16, 1988 and DEQ has been awaiting responses to the preliminary technical comments before the review process can proceed.

Conclusion

Most of the comments are minor in nature and can be addressed in the next annual report. Rio Algom should be encouraged to actively pursue their commercial permit application.

SI:hc

cc: Pat Baumann, District I
Rob Donovan
Rick Engelmann
Rick Chancellor

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MEMORANDUM

TO FILE: 304C, Kerr McGee, (Rio Algom Mining Corp.)
FROM: Jim Honn, District I. Engineering Officer *JSH*
DATE: August 10, 1989
SUBJECT: Annual Report Review

The 1988-1989 Annual Report has been reviewed and found to be acceptable. The bond has been established at \$529,300 from Table 15. The current bond is a self bond for \$902,300. There has been no request for reducing the self bond liability.

For future events with this permit, the bond should be scrutinized further. If Rio Algom obtains the proper transfer by establishing a current bond, I believe the bond amount should be \$902,300 unless Rio Algom requests that it be lowered. If Rio Algom pursues a commercial in-situ operation the bond will obviously increase, but unit costs for the underground mine and facilities should be examined.

At this point in time, the bond amount should be adequate for the remaining work required.

JH/sjm

RIO ALGOM MINING CORPORATION

305 WATERFORD BOULEVARD, SUITE 325
OKLAHOMA CITY, OKLAHOMA 73118

March 31, 1989

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Roy Spears
Wyoming Department of Environmental Quality
Land Quality Division
401 West 19th Street
Cheyenne, WY 82002



RE: Annual Reports
Permits 304C-R1, 5RD, 13RD

Dear Mr. Spears:

Enclosed are Rio Algom Mining Corp.'s Annual Mining and Reclamation Reports for the annual report period ending March, 1989, for Permits 304C-R1, 5RD and 13RD.

Mining operations remained suspended during the past year at the Bill Smith Underground Mine. Reclamation of the open pit areas is continuing and will be completed in 1989, except for re-establishing vegetation. Solution mining operations continued at the "O" Sand project (Permit 13RD) during the report period.

Reclamation cost estimates for each project have been prepared and are attached to the respective reports. Reclamation bonds will be adjusted as needed after DEQ review and approval of the new cost estimates.

Please call me if you have any questions.

Sincerely,

A handwritten signature of Marvin D. Freeman in dark ink.

Marvin D. Freeman
Vice President

MDF:km
Enclosures

xc: Bureau of Land Management
Attn: Ed Coy
951 North Poplar
Casper, WY 82601

LAND QUALITY DIVISION
RECEIVED MAR 31 1989
PERMIT 304C 5RD 13RD

ANNUAL MINING AND RECLAMATION REPORT
SEQUOYAH FUELS "Q" SAND PROJECT
SECTION 36, T36N, R74W
CONVERSE COUNTY, WYOMING
MARCH 21, 1989

1. Company Name Rio Algom Mining Corp.
Address P. O. Box 570 Douglas, Wyoming 82633
Mining Permit No. 5RD, Mineral Mined Uranium
Date of Permit Issuance 8-28-80, Date of Report Filing 3-31-89
2. Time period covered by this report:
March, 1988 to March, 1989
3. Number of acres affected by activities during the report period: None
4. Total number of acres affected to date by mining and related activities under permit and all amendments: 2.5
5. Number of acres graded and contoured during the report period: 0
6. Number of acres topsoiled during the report period: 0
7. Number of acres seeded during the report period: 0
8. Total number of acres graded, topsoiled, and seeded to date: 2.2
9. (a.) Type of seed used for seeding during the report period: None
10. Depth of redistributed topsoil in seeded area: None
11. Water impoundments constructed during report period: None
12. Results of previous revegetation efforts:
Moderate to good germination

LAND QUALITY DIVISION
RECEIVED MAR 31 1989
PERMIT 304 5RD 13RD

13. Description of:

(a.) Pit stability problems:

Not Applicable

(b.) Surface or groundwater conditions:

Aquifer restoration and stability of the "Q" sand project was confirmed based on joint sampling of the eight designated wells by WDEQ and SFC in May 1987.

On acceptance of the aquifer stability demonstration, monitor well sampling for the project was terminated.

(c.) Slope angles on graded and contoured areas:

Not Applicable

(d.) Areas of slumping or sliding:

None

(e.) Newly constructed drainage patterns:

None

(f.) Newly constructed drainage or diversion ditches:

None

(g.) Road construction, culvert and bridge construction:

None

14. Activities for the coming year:

Casings of abandoned wells will be cut-off a minimum of two feet below the surface and capped. The header building will remain in place for use in future leaching programs in the immediate vicinity. Surface reclamation and the plugging of selected wells will be deferred and completed as per the conditions of the commercial license.

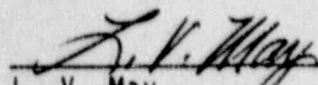
15. Details of next year's mining and reclamation plans:


Reclamation plans are discussed in 14 (above).

Rec'd 3/31/89
Permit 304C, 5RD, 13RD

- | | |
|--|------------------------|
| 16. Summary of reclamation costs for report period: | \$ 3,236 |
| 17. Estimated reclamation costs: (Table 5) | |
| (a.) Plug Wells and Reclaim Surface | \$ 3,900 |
| (b.) Bond Provision for Reseeding | 500 |
| (c.) DEQ Contingency (15%) | <u>700</u> |
| TOTAL | <u>\$ 5,100</u> |
| 18. Quantity of overburden removed: | Not Applicable |
| 19. Quantity (tons) of commodity "mined" during the report
period and total to date: | Not Applicable |
| 20. Results of monitoring and research activities: | |
| Groundwater monitoring was terminated after aquifer restoration and stability
were approved by WDEQ. | |
| 21. Subsidence Information: | |
| There have been no evidences of surface subsidence related to this project
during the reporting period. | |
| 22. Attached Maps: | |
| (a.) Bill Smith Mine Area - Topographic Map (1"=200') | |

Report Prepared By:


L. V. May
Mine Superintendent


D. E. Alberts
Administrative Supervisor

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PERMIT 304 5RD 13RD

TABLE 5
RECLAMATION BOND ESTIMATE
DEQ LQD LICENSE 5RD

	<u>\$ (000)</u>
I. <u>Reclamation - Surface & Well Plugging</u>	
a. Header building removal (60 hours @ \$11/hr.)	\$ 0.7
b. Remove transformers and cables (20 hrs. @ \$11/hr.)	0.2
c. Plug and cap wells and cut-off below surface - 10 wells x \$200/well	2.0
d. Reclaim Surface	
1) Rip hard-pack - grader - 1 hr. @ \$80/hr.	0.1
2) Replace topsoil - 100 c.y. X \$1/c.y.	0.1
3) Disc and seed for stubble - 1 acre @ \$65/acre	0.1
4) Final seeding & fertilizer - 1 acre @ \$150/acre	0.2
5) Mobilization	<u>0.5</u>
Sub-Total	\$ 3.9
II. <u>Bond Provision for Reseeding</u>	\$ 0.5
III. <u>DEQ Contingency (15%)</u>	<u>\$ 0.7</u>
GRAND TOTAL	<u>\$ 5.1</u>

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RECEIVED MAR 31 1989
PERMIT 304 5RD 13RD

THE STATE



OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

LAND QUALITY DIVISION

HERSCHLER BLDG. - THIRD FLOOR
122 WEST 25TH

TELEPHONE 307-777-7756

CHEYENNE, WYOMING 82002

Mr. M.D. Freeman, Director
Chemical Mining Department
Sequoyah Fuels Corporation
P.O. Box 25861
Oklahoma City, OK 73125

RE: Confirmation of Restoration of Q Sand, Permit No. 5 R&D

Dear Mr. Freeman:

Our analysis of the laboratory results from the samples taken at the Q sand project on May 13, 1986, indicate that restoration has been achieved. As you are aware, one year of stabilization monitoring must now commence. However, to expedite the completion of the project, Land Quality will consider the stabilization phase as having been initiated on May 13, 1986.

Completion of restoration has been confirmed by Land Quality hydrologists.

If you should have any questions, please contact District I at this address.

Sincerely,

A handwritten signature in cursive script, reading "Roy G. Spears".

Roy G. Spears
District I Supervisor

RS:kfh

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ANNUAL INSPECTION REPORT AND ANNUAL REPORT REVIEW

TO FILE: Rio Algom Mining Corp., Permit No. 304C, 5RD, 13RD
DATE OF INSPECTION: October 25, 1989 *photo's are in 304c*
PARTICIPANTS: Patrick J. Baumann, DEQ/LQD
Lee Maye, Rio Algom
Dale Alberts, Rio Algom
Ken Holman, Rio Algom
DATE OF REPORT: November 27, 1989
REPORT BY: Patrick J. Baumann, District I Senior Analyst *PJB*

I. INTRODUCTION

Rio Algom Mining Corporation is conducting operations (surface and underground) under Permit No. 304C. In-situ operations are also conducted under 13RD and 5RD.

These permits were operated previously by Sequoyah Fuels and Kerr-McGee Corporation. The permit transfer process (from Kerr-McGee Corp to Rio Algom Mining Corp.) is nearing completion.

II. RECORDS

The NPDES discharge records were reviewed and were found in order.

III. FIELD INSPECTION

A. Permit No. 304C

Operations under this permit consist of reclamation of two large pits (3-10 and 28-33) and two smaller trainer pits. Also, an underground operation (The Bill Smith Shaft) is in an interim stabilization phase.

The 3-10 pit has been reclaimed. Rio Algom seeded the north half in the Fall of 1988. The AML program seeded the south half in the spring of 1989. Photo No. 1 shows a panoramic view of this area. Minor settling has occurred in the north end of this area. Rio Algom will monitor the area for future subsidence.

The trainer pits have been reclaimed and interseeding of grasses is occurring this Fall.

The 28-33 pit was seeded in oats in the Spring of 1989 and was interseeded with grasses this fall. Water erosion repairs have been made on the east wall. A ditch and berm system have been placed on the east wall along with seeding with the contour (see Photo No. 2). Photo No. 3 shows a panoramic view of the 28-33 pit reclamation. Four small areas of erosion, (Photo 4), in the NE corner of the pit, exist showing the subsoil. The sediment from

this erosion has collected in the lower drainage. It will be respread on these erosional areas when it dries out enough to handle. Sediment removal will also reestablish a through drainage.

The shop area is shown in Photo No. 5. Four feet of topsoil has been spread over the concrete of the shop floor. This area was seeded with oats in the spring of 1989 and interseeded with grasses this Fall. The Abandoned Mine Lands Program is to reclaim the access road to this area.

B. R & D-5

This research and development project lies within the Q sand. Photo No. 6 depicts the surface of this area. Underground restoration of the Q sand has been judged a success by DEQ. Surface reclamation at this site is deemed complete except a well house and well heads remain on site.

C. R & D-13

This research and development project lies within the O sand. Photo No. 7 depicts a panoramic view of this area. The area has been seeded and is orderly.

D. General

The entrance sign was noted and contained all necessary information.

NPDES discharge points were observed. Approximately 150 gpm is being pumped from the Bill Smith Shaft to settling Pond No. 1. NPDES - 003 is a sample point in the bleed stream between the treatment facility and Pond No. 1. Settling occurs as the water moves from Ponds 1, 2 and 3. NPDES - 001 is a sample point after pond No. 3 and prior to water entering the stream channel. This system is in order.

Topsoil signs were noted on topsoil piles.

IV. FILL REMOVAL AUTHORIZATION

An area east of the shop/office complex is approved for fill removal. Photo No. 8 shows this knob area of exposed sand. Wind erosion has removed topsoil in this area.

Sand fill material will be removed from this area (disturbing less than one acre) and used for drainage contouring around the shop area.

Rio Algom Mining Corp.
Permit No. 304C
November 27, 1989
Page 3

This disturbed area will be recontoured, topsoiled and seeded after fill removal is complete.

Future annual reports will include operations under this fill project.

V. COMPLIANCE EVALUATION

No violations were noted on this inspection. Rio Algom is encouraged to pursue a commercial permit for their southern area.

VI. ANNUAL REPORT REVIEW

The annual report has been reviewed and is complete.

Comments by Steve Ingle, DEQ Hydrologist, dated November 9, 1989, are attached to this report.

VII. BOND ESTIMATE

A. Introduction

1. Processing of TFN's 2 1/137, 2 2/137 and 2 3/137 are nearing completion. These temporary filing numbers concern Rio Algom Mining Corp.'s self bonding for the transfer of existing permits from Kerr-McGee Corp.. The bond amounts for this transfer have been set at the existing values of: 304C - \$902,300; 13RD - \$157,000 and 5RD - \$109,100.
2. Once these bonds are approved, permits 304C, 13RD and 5RD (TFN's 2 1/136, 2 4/136 and 2 3/136) will be transferred to Rio Algom Mining Corp.. Changes in bond amounts may occur after that time.
3. Rio Algom has submitted new bond estimates for these permits in the 1988-1989 annual reports. Comments for these estimates are listed below.

B. 5RD - Table 5

1. Items I. a,b - Referring to the means cost index and AML contractor costs, \$20/hr may be a more accurate rate for this type of demolition.
2. Item I.c. - Is ten wells the correct number for this permit?
3. Item I.d.4 - The seed mix listed in the permit 304 '88-'89 annual report costs approx. \$100/acre. Adding the cost for fertilizer, labor and equipment should make the total cost greater than \$150/acre.

Paul, DEQ believes bonding for 13RD should be increased and 5RD should be decreased. The exact amount depends upon unit costs used in the bond figure.

C. 13RD - Table C-1

1. Item I.A.1. - Equipment (Backhoe, etc.) rates should be included.
2. Items I.A.2,3 and IV. A. 2,3 - Where is contaminated material being hauled to? Are these current rates?
3. Item I.B.5. - Salvage values may not be used in reclamation bond estimates.
4. All labor rates in items I,II, III and IV should be reevaluated.
5. The dual pipeline between the well field and recovery plant requires removal. Is this estimate included in Table C-1?
6. The buildings and concrete at the recovery plant require demolition and disposal. Is this estimate included in Table C-1?
7. Item III. D. 3,4 - Reclamation rates should be readjusted.
8. Item V. - Four percent is inadequate to adjust listed rates to 1989 rates.
9. Items II. B. 5, C. 2 - Is \$125/sample the current rate?

D. 304C - Table 15

1. Item II. B. 7. - Dozer rates are approx. \$110/hr.
2. Items II. E. 1, III. D. 1 and IV. G. 1 - The topsoil application rate is approx. \$1.00/c.y.
3. Items II. E. 3,4, III. D. 2,3 and IV. G. 3,4 - Seeding costs require reevaluation.
4. All hourly rates require reevaluation.
5. Removal/Demolition rates for office and associated buildings should be included in this bond estimate.

PB/sjm

cc: Lee Maye, Rio Algom (w/ Steve Ingle Memo)

ANNUAL MINING AND RECLAMATION REPORT
MARCH 21, 1989

1. Company Name Rio Algom Mining Corp.
Address P.O. Box 570, Douglas, Wyoming 82633
Mining Permit No. 304C-R-1, 304C A-1, Material Mined Uranium
Date of Permit Issuance 4-4-75, Date of Report Filing 3-31-89
2. Report Period 3-15-88 to 3-15-89
3. Number of acres affected by mining and related activities during
report period: 5.86
- | | |
|-------------------------|---------|
| "O" Sand Wellfield | 15.05 |
| 28-33 Open Pit Mine | (9.19)* |
| 3-10 Open Pit Mine Area | 0.00 |
- *27.33 acres new disturbance sloping and contouring of 28-33 pit
walls less 36.52 acres for mill haul road which Wyoming AML will
reclaim per an exchange agreement.
4. Total number of acres affected by mining and related activities
under period and all amendments: 540.12
5. Number of acres graded and contoured in preparation for
seeding during the report period: 109.05
6. Number of acres topsoiled during the report period: 75.61
7. Number of acres seeded during the report period: 111.75
8. Total number of acres graded, topsoiled, and seeded to date: 344.46

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9. Type of seed used for seeding during the report period:

Streambank Wheatgrass	5#/ac
Thickspike Wheatgrass (Critana)	5#/ac
Western Wheatgrass (Rosana)	5#/ac
Smooth Brome (Lincoln)	3#/ac
Russian Wildrye	2#/ac
Yellowblossom Sweetclover	1#/ac

10. (a) Depth of redistributed topsoil in seeded areas: 8 inches
- (b) Topsoil quantities stockpiled during the report period: 0. 00*
- (c) Total amount of topsoil stockpiled: 1,120,509 c.y.
- (d) Total amount used from inventory: 540,989 c.y.
- (e) Total amount for AML reclamation: 203,687 c.y.
- (f) Amount remaining in inventory: 375,833 c.y.
- (g) Topsoil remaining to be stripped and stockpiled: None*
11. Water impoundments constructed during the report period: None
12. Results of previous revegetation efforts:
- (a) Types of seeds that have germinated and are growing:
- Western Wheatgrass, Thickspike Wheatgrass,
Steambank Wheatgrass, Green Needlegrass, and
Fourwing Saltbush are growing on reclaimed areas.
- (b) Types of seeds that are not growing successfully:
- Fourwing saltbush planted as part of the mix
had a poor germination rate and growth has been
slow.

*Topsoil removed from new disturbance areas is distributed on recontoured areas
and is not stockpiled.

12. (Continued)

(c) An annual eradication program has effectively controlled Canada and musk thistles along the roadsides.

(d) Significant erosional problems:

No significant erosional problems occurred during the report period.

13. Description of:

(a) Pit stability problems:

The pit walls have all been backsloped and contoured, with no significant stability problems encountered during report period.

(b) Surface or groundwater conditions during the report period (GPM from mines):

<u>LOCATION</u>	<u>AVERAGE RATE</u>
Bill Smith Underground Mine	185 GPM
28-33 Mine	0 GPM
3-10 Mine	0 GPM

No water was discharged from the 28-33 Mine or 3-10 mine during the report period. Pumping from the Bill Smith Mine continued throughout the report period.

(c) Slope angles on graded and contoured areas:

The slope angles on the contoured walls of the 28-33 Mine are approximately 3:1 to 5:1.

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13. (Continued)

(d) Slumping and sliding:

No slumping and sliding problems occurred during the report period.

(e) Newly constructed drainage patterns, drainage or diversion ditches:

The 28-33 Pit drainage outlet to the northeast was cut and contoured. Final grading and topsoiling will occur in 1989.

(f) Road, culvert, and bridge construction:

No roads, culverts, or bridges were constructed in the permit area during the report period.

(g) Additional facilities constructed during the report period:

The shop building located at the open pit shop site was dismantled and re-erected at the Bill Smith Mine site.

14. Activities for the coming year:

(a) Mining and related activities:

3-10 Mine Area - Section 3, T37N, R73W

Water monitoring will continue as scheduled.

Monitoring of vegetation growth will continue through report period.

14. (Continued)

(a) (Continued)

28-33 Mine - Sections 21, 28, and 33, T37N, R73W

Air and water monitoring will continue as scheduled.

Topsoiling and preliminary seeding with oat stubble crop are planned for the 28-33 Mine and mine shop yard area during the second quarter of 1989. Final seeding of the 28-33 pit and mine shop yard area is planned for the fourth quarter of 1989.

Bill Smith Underground Mine - Section 36, T36N, R74W

No mining activities are planned at the Bill Smith Underground Mine during the coming year; however, water will continue to be pumped from the mine shaft. The Bill Smith Mine facilities are currently used to house the solution mining pilot project facilities.

(b) Grading and contouring in preparation of seeding during the coming year:

3-10 Mine Area	None
28-33 Mine Area	Final grading and topsoiling of 28-33 area is planned for the second quarter 1989.
Bill Smith Mine Area	None

14. (Continued)

(c) Topsoiling and seeding:

3-10 Mine Area	None
28-33 Mine Area	Topsoil and seed the disturbed areas of the 28-33 area and the mine shop yard (approximately 98 acres).
Bill Smith Mine Area	None

15. Details of next year's mining and reclamation plans:

(a) Mining

No mining is planned for the open pit or underground mining areas during the coming year. The solution mine pilot studies at the Bill Smith Site will continue through the report period.

(b) Reclamation

3-10 Mine

Monitor vegetation growth.

28-33 Mine

Monitor vegetation growth.

16. Summary of reclamation costs for the report period:

<u>3-10 Pit:</u> Final grading and seeding	32,000
<u>28-33 Pit:</u> Sloping and contouring	<u>792,000</u>
TOTAL	<u>\$ 824,000</u>

17. Estimated reclamation costs - existing mines:

The reclamation cost estimate for the permit area has been updated and a copy is attached as Table 15. The total estimated cost, including a 15% contingency is \$525,700.

8. (a) Quantity of overburden removed to expose the commodity mined during the report period:

Primary Stripping 3-10 Mine	<u>0</u>
Primary Stripping 28-33 Mine	<u>0</u>
Secondary Stripping 3-10 Mine	<u>0</u>
Secondary Stripping 28-33 Mine	<u>0</u>

(b) Total quantity of overburden removed to date:

28-33 Mine	<u>8,685,522 c.y.</u>
3-10 Mine (Including Trainers)	<u>4,149,457 c.y.</u>
TOTAL	<u>12,834,979 c.y.</u>

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19. Quantity of U_3O_8 Mined:

<u>Location</u>	<u>During Report Period</u>	<u>Total To Date</u>
Bill Smith Mine	0 Tons	11.97 Tons*
28-33 Mine	0 Tons	252.30 Tons*
3-10 Mine	0 Tons	<u>133.77 Tons*</u>
TOTAL TO DATE		398.04 Tons*

20. Results of monitoring and research activities:

(a) Water Monitoring

Water levels remained stable around the open pit areas.

Little change was noted in shallow water monitor wells at the Bill Smith Underground Mine; however, water levels in the deep observation wells around the site increased slightly during the report period. (See Tables 1 and 2).

Water Quality Monitoring

The interim stabilization water quality monitoring program for the mines in the Permit 304C area include the following sample point locations:

3-10 Mine

Well No. 3-1	NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 3, T37N, R73W
Well No. 10-1	NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 10, T37N, R73W
3-10 Pit (now backfilled)	SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 3, T37N, R73W

*Estimated contained tons of U_3O_8

20. (a) (Continued)

28-33 Mine

Well No. 28-1-S	NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 28, T37N, R73W
Well No. WS-28-1	SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 28, T37N, R73W
Well No. 33-1-S	NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 33, T37N, R73W

Bill Smith Mine

Well No. 25-0-583	SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 25, T36N, R74W
Well No. 25-0-589	SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 25, T36N, R74W
Well No. WW-103	NW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 36, T36N, R74W

Samples for these locations are collected and analyzed for chloride, sulfate, TDS, uranium, radium²²⁶, pH, and conductivity.

Water quality data from samples collected under this program are included in Tables 5A and 5B for surface mine water quality monitoring, and Table 6 for Bill Smith Mine.

Field Sampling Protocol

1. Evacuate two casing volumes of water from well prior to sampling. Only one of the surface mine monitor wells has a pump installed (WS-28-1). The remainder are cased with two inch I.D. PVC pipe and must be air lifted or bailed.
2. Samples are collected in one liter, pre-cleaned, capped polyethylene containers (containers rinsed three times with the water to be sampled).
3. Collected samples are transported to the laboratory for analysis as soon as possible.

20. (a) (Continued)

Field Sampling Protocol (Continued)

4. Samples being analyzed for dissolved constituents are filtered with a 0.45 micron membrane filter.
5. pH measurements are made on-site immediately after sampling. Calibration of the pH meter is done before each sample or series of samples is tested.
6. Conductivity measurements for each well are made at the mine site laboratory.
7. Samples going to an outside laboratory for dissolved metals analysis are acidized with 5ml per liter of nitric acid.

In addition to water quality monitoring at the observation wells, water quality at the Bill Smith Underground Mine continues to be monitored in accordance with the NPDES permit.

(b) Air Monitoring

Monthly 24 hour hi-vol samples were run at the 28-33 Pit in close proximity to disturbed areas to measure any movement of total particulates downwind from the operations. Monthly 24 hour hi-vol samples were run at the 3-10 Pit through August, 1988. Air monitoring at the 3-10 Pit was discontinued in August, 1988 as authorized by Wyoming D.E.Q., Air Quality Division, on August 15, 1988. Sampling data are shown in Tables 7 and 8. All values for particulates are in micrograms per cubic meter.

(c) Radiation Surveys

Gamma Radiation

Gamma radiation measurements continued at three locations downwind from the 28-33 open pit on a regular basis during the past year. Gamma measurements were collected at the 3-10 Pit through August 1988 and were then discontinued.

20. (c) (Continued)

Gamma Radiation (Continued)

A MESA I scintillation survey meter was used to take the gamma measurements. A tabulation of the data is contained in Tables 9 and 10, and locations of the sample sites are shown on the enclosed Surface Mine Plan Map. All gamma measurements are expressed in millirems per hour.

Alpha Radiation

Radon²²² plus daughters are determined at the same locations as the gamma surveys on a regular basis using an Eberline RD-13 counter and PS-2 scaler. Fifty (50) liter samples are taken for each sample, using an air pump with a filter attachment. The data are summarized in Tables 11 and 12. All radon²²² measurements are expressed in picoCuries per liter. The amount of radon emanating from the pit areas is near background levels for the area and is not significant.

Monitoring Program Changes

All disturbed areas of the 3-10 Pit were topsoiled and seeded with stubble crop in the second quarter 1988, with final seeding in the third quarter 1988. Consequently, the Air, Radon and Gamma monitoring programs were discontinued in August, 1988, for the 3-10 Pit area.

21. Subsidence Information

None

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22. Economic Report

Spot market price for uranium continued to decline during 1988 to approximately \$11 per pound, which in recent history is an unprecedented low. The Canadian Free Trade Agreement approved by Congress in 1988, has, and will continue to provide downward pressure on the domestic uranium sales price. The Wyoming State Legislature, having approved a severance tax reduction for uranium, may provide some incentive for increased Wyoming production.

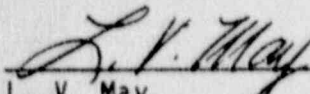
23. Other Activities Within the Permit Area

Wyoming DEQ Abandoned Mine Lands completed reclamation of a small pit mine site in Sec. 28 and two pit areas in Sec. 16 of T37N, R73W. AML began work on the "Betty Lou" pit in Sec. 9, T37N, R73W during report period.

24. Attached Maps:

- (a) Surface Mining Plan Map (1"=500')
- (b) Bill Smith Mine Map (1"=200')

Report Prepared By:



L. V. May
Mine Supervisor



D. L. Alberts
Administrative Supervisor

LAND QUALITY DIVISION
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PERMIT 804 580 1200

TABLE 1

WATER OBSERVATION WELLS
BILL SMITH MINE
PERMIT 304C

SECTIONS 25, 26, 36, T36N, R73W

DEEP OBSERVATION WELLS
WATER LEVEL ELEVATIONS

DATE	<u>TW-1</u>	<u>TW-2</u>	<u>OWD-1</u>	<u>OWD-2</u>	<u>OWD-3</u>	<u>OWD-4</u>	<u>OWD-5</u>	<u>OWD-6</u>	<u>OWD-7</u>	<u>OWD-8</u>	<u>OWD-9</u>
3- 1-88	5176.81	5184.39	5173.51	5177.93	5179.80	5184.04	5185.33	5176.90	5178.23	5194.85	5175.85
6- 7-88	5180.11	5187.59	5077.09	5180.68	5182.93	5187.37	5188.25	5179.32	5174.98	5197.77	5179.43
8-24-88	5176.06	5187.22	5173.42	5175.68	5178.71	5186.71	5184.17	5179.98	5162.90	5195.69	5178.35
11- 3-88	5180.06	5187.89	5177.17	5180.43	5182.55	5186.96	5187.58	5179.90	5178.31	5196.44	5179.68
1-24-89	5184.23	5190.81	5181.01	5184.76	5186.55	5190.04	5191.08	5181.73	5183.56	5200.02	5182.26

LAND QUALITY DIVISION

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PERMIT 304 SRD 13RD

Annual Mining and Reclamation Report
March 21, 1989

TABLE 2

WATER OBSERVATION WELLS
BILL SMITH MINE

SECTIONS 25, 26, 36, T36N, R74W

SHALLOW OBSERVATION WELLS
WATER LEVEL ELEVATIONS

<u>DATE</u>	<u>OWS-1</u>	<u>OWS-2</u>	<u>OWS-3</u>	<u>OWS-5</u>
3- 1-88	5355.45	5356.88	5357.53	5391.55
6- 7-88	5355.45	5356.88	5357.78	5391.46
8-25-88	5355.45	5356.80	5357.53	5391.21
1-24-89	5355.95	5357.13	5350.03	5391.30
11- 3-88	5356.03	5357.55	5358.20	5391.71

1.2

1.7

1.5

1.2

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PERMIT 204 E.O. 12801

Annual Mining and Reclamation Report
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TABLE 3
WATER OBSERVATION WELLS
OPEN PIT AREAS
PERMIT 304C
SECTIONS 3, 10, 15, 16, 21, 22, 28, 33, T37N, R73W
WATER LEVEL ELEVATIONS

<u>Date</u>	<u>3-OW-1</u>	<u>3-OW-2</u>	<u>10-OW-1</u>	<u>15-OW-1</u>	<u>16-OW-1</u>	<u>22-OW-1</u>	<u>28-OWS-1</u>	<u>33-OWS-1</u>	<u>33-OWS-2</u>	<u>21-OW-2</u>
2-15-88	5042.68	5064.29	5088.23	5116.38	5144.59	5140.14	5193.85	5237.52	5246.63	5183.66
6- 6-88	5043.01	5065.21	5088.90	5116.71	5144.87	5140.76	5194.26	5238.15	5247.21	5184.03
8-18-88	5042.68	5065.37	5088.56	5116.55	5144.87	5140.59	5194.18	5237.77	5246.96	5183.28
10-24-88	5042.77	5065.46	5088.15	5116.63	5144.79	5140.34	5194.10	5237.77	5247.29	5183.53
1-24-89	5042.51	5065.62	5087.98	5116.46	5144.79	5140.17	5194.10	5237.77	5246.96	5183.86

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TABLE 4
ELEVATION - WATER LEVELS
3-10 MINE PIT

<u>DATE</u>	<u>WATER ELEV. (Feet)</u>
2-22-83	5141.8
6-22-83	5043.3
9-9-83	5043.8
6-13-84	5046.0
11-12-84	5046.0
10-21-85	5046.0
9-24-86	5046.0

The 3-10 Pit was backfilled during 1987 and is no longer a monitoring point.

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TABLE 5A
WATER QUALITY MONITORING
3-10 MINE
SECTION 3, T37N, R73W

Monitor Well	Date	Uranium mg/l	Radium ²²⁶ pCi/l	pH	Sp. Cond. uhmos	TDS ppm	Cl mg/l	SO ₄ mg/l
3-1	2-15-88	0.07	13.2	7.4	380	262	9	83
3-1	6- 6-88	0.20	6.4	7.4	622	457	7	174
3-1	8-22-88	0.10	13.4	7.5	478	286	24	87
3-1	10-24-88	0.07	12.8	7.5	439	308	11	120
3-1	1-24-89	0.15	9.8	7.6	628	400	3	197
10-1	2-15-88	0.02	6.2	7.5	640	448	6	120
10-1	6- 6-88	0.01	5.3	7.5	663	461	7	132
10-1	8-22-88	0.03	5.2	7.6	676	412	12	95
10-1	10-24-88	0.008	5.2	7.6	628	446	14	115
10-1	1-24-89	0.02	5.2	7.6	671	408	4	131

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TABLE 5B
WATER QUALITY MONITORING
28-33 MINE
SECTION 28, 33, T37N, R73W

Monitor Well	Date	Uranium mg/l	Radium ²²⁶ pCi/l	pH	Sp. Cond. µmhos	TDS ppm	Cl mg/l	SO ₄ mg/l
28-1S	2-15-88	0.52	5.0	7.5	850	712	11	320
28-1S	6- 6-88	0.33	9.0	7.6	918	730	10	324
28-1S	8-22-88	0.38	6.9	7.6	975	668	16	230
28-1S	10-24-88	0.45	7.8	7.6	905	682	16	314
28-1S	1-24-89	0.39	12.0	7.6	931	664	8	319
WS 28-1	3-30-88	0.07	10.6	7.5	646	419	9	165
WS 28-1	6- 6-88	0.06	2.7	7.3	632	491	7	266
WS 28-1	8-22-88	0.07	2.9	7.3	656	415	10	97
WS 28-1	12- 8-88	0.03	30.8	7.3	495	282	3	95
33-1S	2-15-88	0.06	8.9	7.6	580	465	12	73
33-1S	6- 6-88	0.04	10.6	7.5	642	453	6	154
33-1S	8-22-88	0.05	6.5	7.6	666	406	15	109
33-1S	10-24-88	0.04	6.2	7.7	628	434	13	160
33-1S	1-24-89	0.05	3.8	7.5	617	420	4	160

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TABLE 6

WATER QUALITY MONITORING
BILL SMITH MINE
SECTION 36, T36N, R74W

Monitor Well	Date	Uranium mg/l	Radium ²²⁶ pCi/l	pH	Sp. Cond. uhmos	TDS ppm	Cl mg/l	SO ₄ mg/l
25-583	3-28-88	0.02	78.2	7.4	710	367	10	140
25-583	6-15-88	0.02	73.0	7.5	779	590	7	274
25-583	8-23-88	0.01	90.0	7.3	817	580	10	190
25-583	12- 1-88	0.02	122	7.6	693	502	2	271
25-589	3-28-89	0.009	41.9	7.7	752	548	5	260
25-589	6-15-88	0.010	115	7.1	790	584	5	260
25-589	8-23-88	0.010	126	7.4	755	563	10	180
25-589	12- 1-88	0.010	167	7.7	697	546	2	286
W-103	2-15-88	0.02	1.9	7.1	420	267	7	50
W-103	6- 6-88	0.02	4.6	7.5	408	272	8	42
W-103	8-22-88	0.03	1.6	7.4	418	234	14	35
W-103	10-24-88	0.02	1.6	7.2	433	251	15	50
W-103	1-24-89	0.02	1.1	7.2	373	226	5	56

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TABLE 7

AIR MONITORING DATA

3-10 MINE AREA

<u>DATE</u>	<u>MONITORING STATION</u>	<u>DUST* (ug/M³)</u>
1-26-88	3-10 Pit	29.03
2-15-88	3-10 Pit	39.92
3-21-88	3-10 Pit	16.00
4-11-88	3-10 Pit	44.48
5-23-88	3-10 Pit	22.64
6-15-88	3-10 Pit	22.63
7- 6-88	3-10 Pit	28.90
8-17-88	3-10 Pit	64.80

NOTE: Discontinued air monitoring @3-10 Pit as authorized by Wyoming Department of Environmental Quality, Air Quality Division, 8-15-88.

This Table will be deleted from future annual reports.

TABLE 8

AIR MONITORING DATA
28-33 MINE AREA

<u>DATE</u>	<u>MONITORING STATION</u>	<u>DUST₃* (ug/M³)</u>
1-27-88	28-33 Pit	13.6
2-16-88	28-33 Pit	40.0
3-22-88	28-33 Pit	53.6
4-12-88	28-33 Pit	38.8
5-24-88	28-33 Pit	86.8
6-16-88	28-33 Pit	25.3
7- 7-88	28-33 Pit	64.5
8-18-88	28-33 Pit	32.4
9-21-88	28-33 Pit	49.3
10-18-88	28-33 Pit	18.5
11-10-88	28-33 Pit	13.1
12-14-88	28-33 Pit	11.8

NOTE: The 28-33 mine area will be topsoiled and seeded with stubble cover in the second quarter and air monitoring will be discontinued in mid-1989.

TABLE 9
GAMMA RADIATION MONITORING
3-10 PIT AREA
(All Values in Millirems Per Hour)

<u>DATE</u>	<u>STATION 3-GA-1</u>	<u>STATION 3-GA-2</u>	<u>STATION 3-GA-3</u>
2-29-88	0.008	0.012	0.008
6- 8-88	0.008	0.012	0.008
8-23-88	0.014	0.020	0.012

NOTE: Gamma radiation monitoring in the 3-10 pit area
was discontinued after topsoiling per LQD approval.

This Table will be deleted from future annual reports.

TABLE 10
GAMMA RADIATION MONITORING
28-33 PIT AREA
(All Values in Millirems Per Hour)

<u>DATE</u>	<u>STATION 28-GA-1</u>	<u>STATION 28-GA-2</u>	<u>STATION 28-GA-3</u>
2-29-88	0.006	0.006	0.014
6- 8-88	0.006	0.006	0.014
8-23-88	0.010	0.014	0.021
11- 8-88	0.016	0.018	0.008
3-15-89	0.021	0.010	0.012

NOTE: Gamma radiation monitoring in the 28-33 Pit area will be discontinued after topsoiling is completed in mid-1989.

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TABLE 11

3-10 MINE

ALPHA RADIATION CONCENTRATIONS

(RADON²²² PLUS DAUGHTERS)

<u>DATE</u>	<u>STA 3 GA1</u> <u>pCi/LITER</u>	<u>STA 3 GA2</u> <u>pCi/LITER</u>	<u>STA 3 GA3</u> <u>pCi/LITER</u>
2-29-88	0.03	0.02	0.02
6- 8-88	0.04	0.06	0.09
8-23-88	0.02	0.01	0.01

NOTE: Alpha radiation sampling in the 3-10 Pit area was discontinued after topsoiling per LQD approval. This table will be deleted from future annual reports.

TABLE 12
28-33 MINE
ALPHA RADIATION CONCENTRATIONS
(RADON²²² PLUS DAUGHTERS)

<u>DATE</u>	<u>STA 28 GA1</u> <u>pCi/LITER</u>	<u>STA 28 GA2</u> <u>pCi/LITER</u>	<u>STA 28 GA3</u> <u>pCi/LITER</u>
2-29-88	0.02	0.02	0.02
6- 8-88	0.02	0.02	0.03
8-23-88	0.02	0.02	0.02
11- 8-88	0.05	0.05	0.04
3-13-88	0.01	0.01	0.06

NOTE: Alpha Radiation sampling in the 28-33 Pit area will be discontinued after topsoiling is complete in mid 1989.

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TABLE 13

ACREAGE TO BE RECLAIMED
CURRENTLY EXISTING UNRECLAIMED AREAS PLUS
ADDITIONAL ACREAGE TO BE AFFECTED DURING 1989
(SLOPED PIT WALLS, ETC.)

<u>AREA</u>	<u>ACRES</u>
28-33 Ore Pad (Access Road Remaining)	2.10
28-33 Pit (Incl. Ph. I and Ph. II)	49.34
28-33 Contractor Area and Contr. Access	2.70
28-33 New 1988 Disturbance	27.33
28-33 Topsoil Piles (9.35, 3.35, 3.85)	16.55
28-33 Shop and Office Area	8.57
Sub-Total - 28-33	106.59
Bill Smith Surface Plant, Yard, Spoil	10.57
Bill Smith Storage Yard (50% of 10.18 acres)	5.09
Access Road (1/2 roadbed)	4.75
Settling Ponds, Treatment Plant Area	8.60
Topsoil Piles (1.35, 0.51, 1.50)	3.36
Other Roads (Access to ISL Wellfield)	5.00
Miscellaneous (area around evap. ponds, below settling ponds, etc.)	6.41
Sub-Total - Bill Smith	43.78
28-33 Access Road (25.49 ac. x 0.5)	12.75
Sub-Total	12.75
TOTAL ACRES TO BE RECLAIMED - ALL AREAS	<u>163.12</u>

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TABLE 14
AREAS PREVIOUSLY RECLAIMED

		<u>ACRES</u>
<u>3-10 MINE</u>		
3-10 Trainer Spoil Pile	15.10	
3-10 Trainer Pits and Sloped Walls	20.80	
3-10 Trainer Pits Topsoil Piles	11.16	
3-10 Haul Road to Trainer Pits	2.40	
3-10 Spoil Pile and Ore Pad	52.99	
3-10 Pit (Adjusted for AML Exchange)	26.08	
3-10 Topsoil Piles (5.40, 5.17)	10.57	
3-10 Water Treatment Plant and Ponds	3.68	
3-10 Road from Trainer Pits	<u>6.33</u>	
Sub-Total - 3-10		149.11
<u>28-33 MINE</u>		
28-33 Access Road Ditches and Backslopes	33.94	
Mill Road Ditches and Backslopes	54.80	
28-33 Spoil Pile	86.40	
28-33 Contractor Area #1	1.22	
N. Toe of 28-33 Spoil Pile	3.25	
28-33 Ore Pad	14.32	
8-33 Treatment Plant and Ponds	<u>3.68</u>	
Sub-Total 28-33		197.61
<u>BILL SMITH MINE</u>		
Bill Smith Mine Testwell Sites	2.80	
Miscellaneous - Bill Smith Mine	4.19	
ISL Pilot Pipeline and Wellfield	<u>5.80</u>	
Sub-Total - Bill Smith Mine		<u>12.79</u>
TOTAL		<u>359.51</u>
<u>AREAS THAT WILL NOT BE FULLY RECLAIMED</u>		<u>UNRECLAIMED ACRES</u>
28-33 Access Road (Reduced to size of previously existing road)		12.74
Bill Smith Mine Access (Reduced to size of previously existing road)		<u>4.75</u>
TOTAL		<u>17.49</u>

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TABLE 14 (Continued)

AEAS PREVIOUSLY RECLAIMED

ACRES

AREAS TO BE RECLAIMED BY OTHERS

3-10 Mine disturbance to be reclaimed
by Wyoming AML in exchange for AML
work completed by SFC on AML Project 15
disturbance

20.93

Mill haul road to be reclaimed by
Wyoming AML in exchange for Wyoming
AML's use of haul road

36.52

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TABLE 15

RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 1989

	<u>1989 Dollars (000)</u>
I. 3-10 Mine Area	\$ 37.2
II. 28-33 Mine Area	214.4
III. Open Pit Shop Area & Access Road	37.1
IV. Bill Smith Mine Area	<u>145.5</u>
TOTAL FOR ALL AREAS	\$ 434.2
V. Overhead and Management (6% of Items I-IV)	26.1
VI. Contingency (15% of Items I-V)	<u>69.0</u>
TOTAL RECLAMATION COST	<u>\$ 529.3</u>

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TABLE 15 (Continued)
RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 1989

	<u>1989 Dollars (000)</u>
I. <u>3-10 MINE (Includes Trainer Pits)</u>	
A. <u>WATER REMOVAL</u> - Complete	-
B. <u>TOPSOIL REMOVAL</u> - Complete	-
C. <u>BACKFILL PIT TO THROUGH DRAINAGE</u> - Complete	-
D. <u>SLOPING AND CONTOURING ORE PAD AND SPOIL PILE</u> - Complete	-
E. <u>FINAL CONTOURING IN PIT</u> - Complete	-
F. <u>CONTOUR AND TOPSOIL ROAD TO TRAINER PITS</u> - Complete	-
G. <u>WATER TREATMENT SITE</u>	
1. Building and foundation removal - lump sum	2.7
2. Remove slimes - Complete	-
3. Reclaim ponds - Complete	-
4. Reclaim building site	0.5
H. <u>RADIATION SURVEYS</u> - Complete	-
I. <u>RECLAIM AFFECTED AREAS</u> - Complete	-

LAND QUALITY DIVISION
RECEIVED MAR 31 1989
PERMIT 304 5RD 13RD

TABLE 15 (Continued)

RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 1989

	1989 Dollars (000)
I. <u>3-10 MINE (Includes Trainer Pits) (Continued)</u>	
J. <u>ABANDON MONITOR WELLS</u>	
1. 6 wells @ \$100/well	0.6
K. <u>REVEGETATION BOND</u>	
137 acres affected @ \$200/acre	27.4
12 acres drainage @ \$500/acre (1750' x 300' wide)	6.0
3-10 MINE TOTAL	<u>\$ 37.2</u>
II. <u>28-33 MINE RECLAMATION</u>	
A. <u>TOPSOIL REMOVAL - PERIMETER OF PIT AND OUTLET - Complete</u>	-
B. <u>BACKFILL PIT, THROUGH DRAINAGE TO NORTH</u>	
1. Contractor Mobilization - Complete	-
2. Pit outlet (3:1 to 5:1 slopes) - Complete	-
3. Material from south end of pit - Complete	-
4. Material from sub-station area - Complete	-
5. Material from north end of pit - Complete	-
6. West - slope pit wall - Complete	-
7. East - slope pit wall - 100 M c.y. D-9 Dozer 320 hrs. @ \$102/hr.	32.6
8. Final sloping and contouring Motor Grader 224 hrs. @ \$80/hr.	17.9

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TABLE 15 (Continued)

RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 19891989
Dollars
(000)II. 28-33 MINE RECLAMATION (Continued)C. WATER TREATMENT SITE

- | | |
|---|-----|
| 1. Building and foundation removal - lump sum | 2.7 |
| 2. Remove slimes - Complete | - |
| 3. Level and reclaim ponds - Complete | - |
| 4. Relaim building site | 0.5 |

D. RADIATION SURVEYS - 56 man hours @ \$11/hr. 0.6E. RECLAIM AFFECTED AREAS

- | | |
|---|------|
| 1. Topsoil - 88 M c.y. @ \$.65/c.y. (81.47 ac) | 57.2 |
| 2. Motor Grader - 120 hrs. @ \$80/hr. | 9.6 |
| 3. Disc and seed for stubble - 107 ac @ \$65/ac | 7.0 |
| 4. Final seeding and fertilizer - 107 ac @ \$150/ac | 16.1 |
| 5. Soil analysis - 12 @ \$16/ea. | 0.2 |

F. ABANDON WELLS

- | | |
|---------------------------------|-----|
| 1. 8 Monitor Wells @ \$100/well | 0.8 |
|---------------------------------|-----|

G. REVEGETATION BOND

- | | |
|--|------|
| 276 acres affected @ \$200/ac | 55.2 |
| 28 acres drainage @ \$500/ac (4000' x 300' wide) | 14.0 |

28-33 MINE TOTAL

\$ 214.4

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TABLE 15 (Continued)

RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 1989

	1989 Dollars (000)
III. <u>OPEN PIT SHOP AND ACCESS ROAD</u>	
A. <u>SHOP BUILDING SITE</u>	
1. Remove remaining material and equipment	5.0
2. Rip building foundations and bury debris - Complete	-
3. Cover material for building sites - Complete	-
B. <u>ACCESS/HAUL ROAD</u>	
1. Rip half 28-33 access road (to width of previous roadbed - 12.75 acres) Motor Grader 24 hrs. @ \$80/hr.	1.9
2. Rip haul road to 3-10 pit (36.52 acres) Motor Grader 72 hrs. @ \$80/hr. (deleted by agreement with Wyoming AML)	-
C. <u>RADIATION SURVEYS</u> - 20 man hours @ \$11/hr.	0.2
D. <u>RECLAIM AFFECTED AREAS</u>	
1. Topsoil - 23 M c.y. @ \$.80/c.y. (21.32 ac)	18.4
2. Motor Grader - 30 hrs. @ \$80/hr.	2.4
3. Disc and seed for stubble - 21 acres @ \$65/ac	1.4
4. Final seeding and fertilizer - 21 acres @ \$150/ac	3.2
5. Soil analysis - 12 @ \$16/ea.	0.2
E. <u>ABANDON WATER WELL</u>	0.2
F. <u>REVEGETATION BOND</u>	
21 acres affected @ \$200/ac	4.2
OPEN PIT SHOP AND ACCESS ROAD TOTAL	<u>\$ 37.1</u>

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TABLE 15 (Continued)
RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 1989

	<u>1989 Dollars (000)</u>
IV. <u>BILL SMITH MINE AREA</u>	
A. <u>PLUG SHAFT</u>	
1. Backfill 446 ft. of shaft (2800 c.y. @ \$1.00/yd.)	2.8
2. Steel plate and rebar	1.8
3. Cement - 40 c.y. @ \$70/yd. delivered	2.8
4. 100 man hours @ \$11/hr.	1.1
5. Dirt cover - 350 c.y. @ \$1.00/c.y.	0.4
B. <u>PLUG VENTHOLE</u>	
1. Backfill 335 ft. of hole (270 c.y. @ \$1.00/yd.)	0.3
2. Backhoe 16 hrs. @ \$45/hr.	0.7
3. Steel plate and rebar	0.3
4. Cement - 10 c.y. @ \$70/c.y. delivered	0.7
5. 40 man hrs. @ \$11/hr.	0.5
6. Dirt cover - 100 c.y. @ \$1.00/c.y.	0.1
C. <u>MINE WATER TREATMENT PONDS</u>	
1. Settled solids to Pond 3 for burial in place D-9 Dozer 40 hrs. @ \$110/hr.	4.4
2. Backfill and contour settling ponds D-9 Dozer 160 hrs. @ \$110/hr. Motor Grader 16 hrs. @ \$ 80/hr.	13.2 1.3

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TABLE 15 (Continued)

RECLAMATION COST ESTIMATE SUMMARY
PERMIT 304C - MARCH, 1989

	1989 Dollars (000)
IV. <u>BILL SMITH MINE AREA (Continued)</u>	
D. <u>MINE BUILDINGS AND EQUIPMENT</u>	
1. Dismantle & remove buildings - lump sum	30.0
2. Rip building foundations and bury debris	
D-9 Dozer 80 hrs. @ \$110/hr.	8.8
Motor Grader 40 hrs. @ \$ 80/hr.	3.2
3. Cover material for building site - 2,400 c.y. @ \$.80/c.y.	1.9
E. <u>ADDITIONAL LEVELING AND CONTOURING</u>	
1. Rip compacted areas and contour mine site	
D-9 Dozer 40 hrs. @ \$110/hr.	4.4
Motor Grader 72 hrs. @ \$ 80/hr.	5.8
2. Rip 1/2 of access road	
Motor Grader 12 hrs. @ \$ 80/hr.	1.0
F. <u>RADIATION SURVEYS - 40 man hours @ \$11/hr.</u>	0.4
G. <u>RECLAIM AFFECTED AREAS</u>	
1. Topsoil - 43 M c.y. @ \$.80/c.y. (40.42 ac)	34.4
2. Motor Grader - 60 hrs. @ \$80/hr.	4.8
3. Disc and seed for stubble - 43.78 ac @ \$65/ac	2.8
4. Final seeding and fertilizer - 43.78 ac @ \$150/ac	6.6
5. Soil analysis - 10 @ \$16/ea.	0.2
H. <u>ABANDON WELLS</u>	
1. 14 Monitor Wells @ \$100/ea.	1.4
2. 3 Water Wells @ \$200/ea.	0.6
I. <u>REVEGETATION BOND</u>	
44 acres affected @ \$200/ac.	8.8
BILL SMITH MINE AREA TOTAL	<u>\$ 145.5</u>

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TOPSOIL INVENTORY
(Refer to Attached Maps for Location of Topsoil Piles)
28-33 MINE AREA

Topsoil Pile No.	Location	Volume (c.y.)	Amount Used	Remaining	Remarks
1	NE $\frac{1}{4}$ SE $\frac{1}{4}$ 28-37N-73W	266,899	192,566	74,333	192,566 c.y. used on 28-33 spoil
2	SW $\frac{1}{4}$ SE $\frac{1}{4}$ 28-37N-73W	103,773	0	103,773	
3	NE $\frac{1}{4}$ NW $\frac{1}{4}$ 33-37N-73W	116,656	0	116,656	
4	NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ 33-37N-73W	3,081	2,000	1,081	2,000 c.y. used on Contr. Area and Treatment Plant
5	SE $\frac{1}{4}$ SW $\frac{1}{4}$ 28-37N-73W	5,223	5,223	0	Used on ore pad
6	SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ 28-37N-73W	(Included in Access Road Totals)			
7	SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ 28-37N-73W	(Included in Access Road Totals)			
8	SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ 28-37N-73W	1,111	1,111	0	Used on water treatment site
9	NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ 33-37N-73W	(Included in Access Road Totals)			
Sub-Total		496,743	200,900	295,843	

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TOPSOIL INVENTORY
(Refer to Attached Maps for Location of Topsoil Piles)
3-10 and TRAINER PIT AREAS

Topsoil Pile No.	Location	Volume (c.y.)	Amount Used	Remaining	Remarks
3-1	SE $\frac{1}{4}$ 4-37N-73W	222,127	77,175	144,952*	For AML use on pits and haul road
3-2	NW $\frac{1}{4}$ 3-37N-73W	85,808	85,808	-	Reclaimed
3-3	NE $\frac{1}{4}$ SE $\frac{1}{4}$ 3-37N-73W	62,256	62,256	-	Reclaimed
3-4	NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ 3-37N-73W	8,376	8,376	-	Reclaimed
3-5	NE $\frac{1}{4}$ SW $\frac{1}{4}$ 3-37N-73W	600	600	-	Reclaimed
3-6	NE $\frac{1}{4}$ SE $\frac{1}{4}$ 4-37N-73W	4,861	4,861	-	Reclaimed
3-7	NE $\frac{1}{4}$ SE $\frac{1}{4}$ 3-37N-73W	1,711	1,711	-	Reclaimed
3-8	SE $\frac{1}{4}$ SE $\frac{1}{4}$ 3-37N-73W	2,222	-	2,222*	For AML use on haul road
3-9	SE $\frac{1}{4}$ SE $\frac{1}{4}$ 3-37N-73W	1,111	0	1,111*	For AML use on haul road
3-10	SE $\frac{1}{4}$ SE $\frac{1}{4}$ 3-37N-73W	1,967	1,967	-	Reclaimed
Sub-Total		391,039	242,754	148,285*	

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*For AML use in pit and haul road reclamation - excluded from Rio Algom summary.

TOPSOIL INVENTORY
(Refer to Attached Maps for Location of Topsoil Piles)

BILL SMITH MINE AREA

<u>Topsoil Pile No.</u>	<u>Location</u>	<u>Volume (c.y.)</u>	<u>Amount Used</u>	<u>Remaining</u>	<u>Remarks</u>
1	NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ 36-36N-74W	14,300	0	14,300	
2	NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ 36-36N-74W	15,800	0	15,800	
3	NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ 36-36N-74W	12,100	0	12,100	
4	SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ 36-36N-74W	520	0	520	
5	SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ 25-36N-74W	3,350	0	3,350	
6	SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ 26-36N-74W	1,520	0	1,520	
7	NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ 26-36N-74W	300	0	300	
	Sub-Total	47,890	0	47,890	

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TOPSOIL INVENTORY

(Refer to Attached Maps for Location of Topsoil Piles)

<u>Topsoil Pile No.</u>	<u>Location</u>	<u>Volume (c.y.)</u>	<u>Amount Used</u>	<u>Remaining</u>	<u>Remarks</u>
<u>OPEN PIT ACCESS ROAD</u>					
6 small unnumbered topsoil piles - shop to 28-33 spoil pile, plus 30 small piles - 28-33 pit to County Road 31		53,000	30,900	22,100	30,900 c.y. used on Roadsides
<u>MILL HAUL ROAD</u>					
37 small unnumbered topsoil piles - shop to Bear Creek		121,837	66,435	55,402	66,435 c.y. used on Roadsides - Balance for AML use on haul road. (Excluded from Summary)
<u>OPEN PIT SHOP AND YARD</u>					
	SW $\frac{1}{4}$ SW $\frac{1}{4}$ 21-37N-73W	10,000	0	10,000	
	Sub-Total	184,837	97,335	32,100*	

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*Excludes 55,402 c.y. for AML use on haul road.

TOPSOIL INVENTORY SUMMARY

	<u>Volume (c.y.)</u>	<u>Amount Used (c.y.)</u>	<u>Amount Remaining (c.y.)</u>
28-33 Mine Area	496,743	200,900	295,843
3-10 Mine Area (Including Trainers)	391,039	242,754	- (1)
Bill Smith Mine Area	47,890	-	47,890
Open Pit Roads and Shop Yard	<u>184,837</u>	<u>97,335</u>	<u>32,100 (2)</u>
TOTAL	<u>1,120,509</u>	<u>540,989</u>	<u>375,833</u>

1) Excludes 148,285 c.y. for AML use on abandoned mines and haul road.

2) Excludes 55,402 c.y. for AML use on haul road.

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