

FORD ATTACHMENT A

BISON BASIN
DECOMMISSIONING PROJECT

PHASE I
(Aquifer Restoration)

STATE OF WYOMING CONTRACT No. 9-00487

FINAL REPORT
(Period: August 1, 1986 through March 22, 1988)

to
LAND QUALITY DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY

by
ALTAIR RESOURCES INC.
Casper, Wyoming

June 1988

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE NO.
1.0	SUMMARY	1
2.0	WELLFIELD	4
3.0	WATER TREATMENT PLANT	8
4.0	REGULATORY	13
5.0	RESTORATION RESULTS	15
5.1	General	15
5.2	Excursion Monitor Wells	16
5.3	Restoration Sampling Wells	18
6.0	EVAPORATION PONDS	24
7.0	PERSONNEL	24
8.0	MISCELLANEOUS	25
9.0	CONCLUSIONS	27

LIST OF FIGURES

FIG. 1.1	GENERAL LOCATION MAP	2
FIG. 5.1	MINING UNIT NO. 1 MONITOR WELLS	17
FIG. 7.1	STAFF ORGANIZATIONAL CHART	26

LIST OF TABLES

TABLE 2.1	R.O. UNITS PERFORMANCE DATA	10
TABLE 5.1	INITIAL RESTORATION SAMPLING WELLS	18
TABLE 5.2	FINAL RESTORATION SAMPLING WELLS	19
TABLE 5.3	RESTORATION PARAMETERS, LONG LIST	21
TABLE 5.4	RESTORATION DATA FOR SELECT PARAMETERS	22

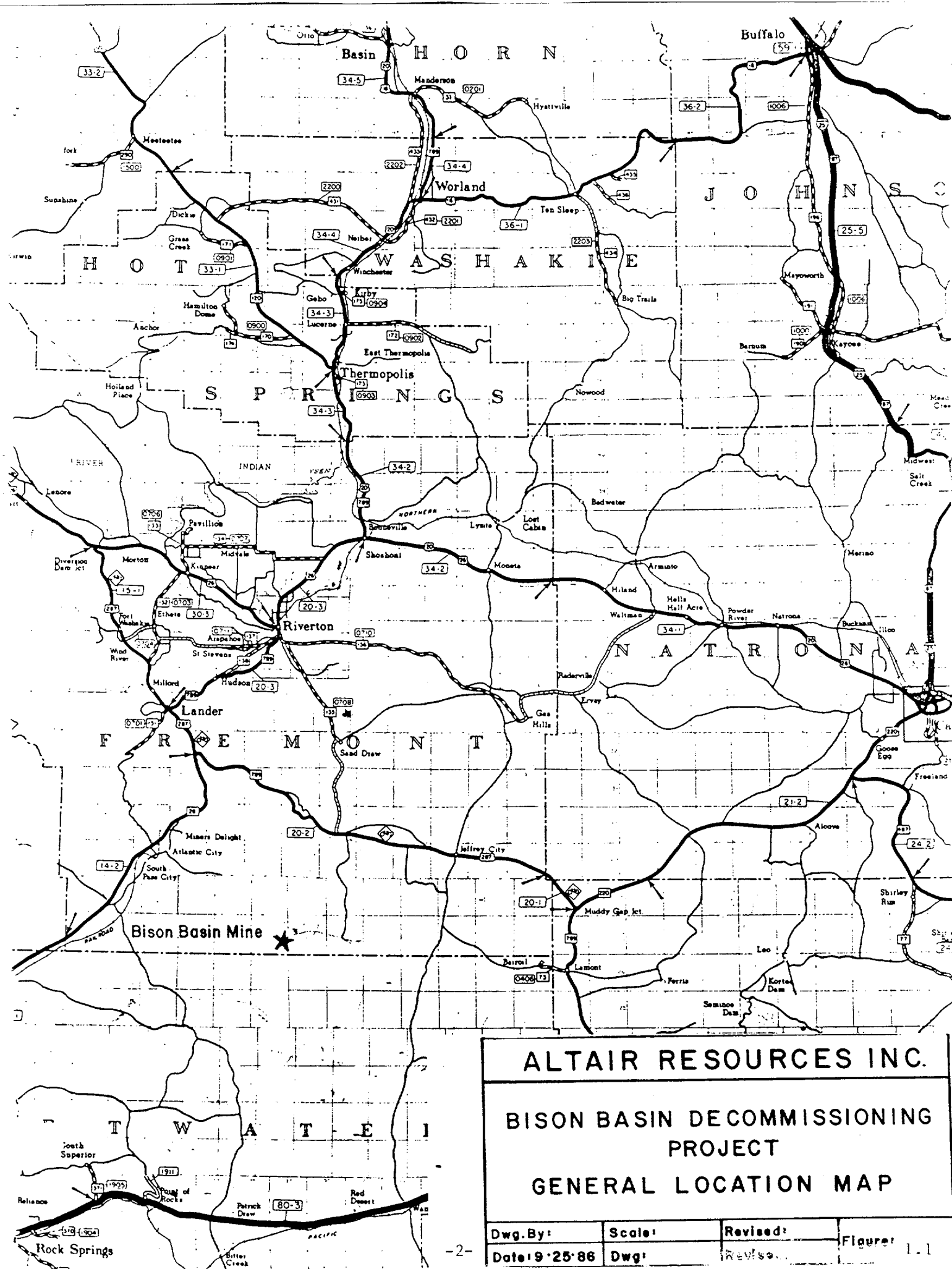
LIST OF APPENDICES

APPENDIX LETTER	DESCRIPTION
A	PROJECT PHOTOGRAPHS
B	NRC LICENSE & AMENDMENTS
C	ALARA AUDITS
D	STATE MINE INSPECTOR REPORTS
E	DEQ CONTRACT SPECIFICATIONS
F	EXCURSION MONITOR WELL DATA
G	RESTORATION SAMPLING WELL DATA (Phase I, Part IA, Short List)
H	RESTORATION SAMPLING WELL DATA (Phase I, Part IA, Long List)
I	RESTORATION SAMPLING WELL DATA (Phase I, Part IB, Long List) Stability Period
J	COMBINED WATER QUALITY DATA (Phase I, Part IA & IB, Long List)

1.0 SUMMARY

On August 1, 1986 the Land Quality Division of the Wyoming Department of Environmental Quality (DEQ/LQD) awarded a contract to Altair Resources Inc. (Altair) for Phase I of the Bison Basin Decommissioning Project. Phase I of the project involved aquifer restoration at the inactive Bison Basin in situ uranium solution mine located in southern Fremont County, Wyoming (see Figure 1). With the signing of the contract Altair immediately started site preparation activities at the Bison Basin mine. During the first two months of the contract pumps were installed in the production wells, well heads and wellfield lines were repaired and winterized, and most of the wells were cleaned by air lifting to improve injectivity and recovery rates. The water treatment system consisting of three Reverse Osmosis (R.O.) units was ordered from Polymetrics, Inc. during the first month of the project with a scheduled delivery date of early October, 1986.

The repair and winterization of the wellfield, and the repiping and repairs in the plant were completed in October. The three new R.O. units arrived in early October and were immediately installed in the circuit. On October 23, 1986 the water treatment plant and wellfield were placed in operation with no major problems encountered. The total dissolved solids (TDS) of the clean water output from the R.O. units of approximately 500 mg/l was well within the 1000 mg/l



DEQ specification. By the end of the first month the R.O. units had processed some 3.5 million gallons of contaminated groundwater and the entire wellfield was already seeing significant improvement in water quality.

The water treatment system and wellfield operated almost continuously until the required six pore volumes (114 million gallons) of contaminated water had been treated and returned to the aquifer. The R.O. units processed about 10 million gallons of water each month until the full six pore volume requirement had been achieved on September 22, 1987. The water quality in the contaminated aquifer responded extremely well to the restoration effort with the final TDS of the groundwater about half of the original pre-mining baseline value. A few chemical parameters were slightly over their respective Target Restoration Values (TRV's) at the end of the six pore volumes but not to any significant degree. As it turned out, the Bison Basin production aquifer was essentially restored after the circulation of only four pore volumes of R.O. treated water. During the aquifer restoration project there were no vertical or horizontal excursion in the wellfield.

The final stage of Phase I of the Bison Basin decommissioning consisted of the six month stability period which started on September 22, 1987 and ended on March 22, 1988. During the stability period the four primary restoration sampling wells were sampled monthly and analyzed for the long

list of chemical parameters. The data indicate that there was no significant elevation in the concentrations of the monitored chemical parameters. A small electrical generator was installed at the site during the stability period to allow the big CAT generators to be shut off thereby lowering energy costs.

Phase I of the Bison Basin Decommissioning Project was successfully completed on March 22, 1988 about 19.7 months from the start of the contract which was over two months ahead of the contract schedule. During the majority of the project there were eleven individuals employed at the site, all from Fremont County. There were no loss time accidents or injuries. All equipment used in the aquifer restoration activities operated satisfactorily, including the old process pumps and piping, and the large CAT generators. Through a conscientious effort of the project personnel, the old and high mileage vehicles leased from the DEQ were kept in service during the entire project. Photographs of the groundwater restoration activities are presented in Appendix A.

2.0 WELLFIELD

The Bison Basin mine production zone aquifer contaminated by in situ mining operations in 1981-82 lies some 400 feet below the surface in a 15 foot thick sandstone unit confined above and below by thick mudstone and siltstone deposits. The groundwater in the production zone aquifer is

under confined conditions with some 300 feet of head under natural conditions. The target of the restoration effort was what the former operator called Mining Unit No. 1 which is some eleven acres in size and contains about 70 production wells and 140 injection wells. Most of the wells are constructed of 4-1/2 inch diameter yellowed plastic pipe, and a few wells are constructed of 4 inch diameter schedule 40 PVC pipe.

The wellfield is circled by a ring of 9 horizontal excursion monitor wells, and there are five upper aquifer and one lower aquifer vertical excursion monitor wells. Each of the excursion monitor wells were sampled twice a month during the active restoration phase of the project. There were no horizontal or vertical excursions during the entire Phase I portion of the Bison Basin Decommissioning Project. The data from the excursion monitor wells obtained during the aquifer restoration project are presented in Section 5.

During the first two months of the project prior to the start-up of the R.O. units the majority of the work effort was concentrated in the wellfield. The 2 inch feeder lines in the wellfield required a significant amount of repair and replacement. Many of the wells in the wellfield were cleaned by air lifting to improve recovery and injection rates. Pumps were installed in the 70 recovery wells and insulated wellhead boxes were placed around each well as protection from the winter cold. Wellheads which included flow meters and

pressure gages were placed on each well. An electrical contractor from Lander was utilized to check out the electrical system in the wellfield and make needed repairs.

In late September, 1986, all obvious repairs to the wellfield had been completed and potable water was circulated through the system under pressure to check for leaks. The few small leaks that did occur were immediately repaired. Following these repairs the pipelines were insulated with polyurethane foam to protect from freezing during winter operations. A 7-1/2 horsepower pump was set in the deep domestic well for the purpose of providing clean make up water to replace the brine from the R.O. units that was routed to the evaporation ponds. The deep well taps an aquifer that is some 400 feet below the production zone (ore body) aquifer and about 800 feet in total depth. The water from the deep well is relatively low in TDS but has some hydrogen sulfide in it which serves as a natural reductant in the aquifer restoration process. A range from 25 to 60 GPM of water was obtained from the deep well for makeup water during the restoration operation.

On October 23, 1986 the wellfield and water treatment plant were placed in operation at an initial flow rate of about 400 GPM and an injection pressure of about 40 PSI. The wellfield operated satisfactorily during the entire eleven month active restoration period. Injection pressure was normally about 80 PSI and the flow rate ranged from about 250 to

400 GPM. Certain injection wells that tended to partially plug due to particulants and sand blinding had to be periodically cleaned by air lifting. In the course of the project, five out of a total of 140 injection wells had to be taken out of the circuit because of lack of flow that could not be restored. Typically, during the active restoration stage of the project, there were from 67 to 70 recovery wells and about 135 injection wells in operation at any given time. On two occasions near the end of the project, part of the wellfield was briefly shutdown because of a problem with one of the two large CAT generators (see Section 3). No significant problems resulted from these electrical power interruptions.

On September 22, 1987 the six pore volume requirement was achieved. The entire wellfield including both recovery and injection wells were shutdown, and all wellfield operations were terminated. On the day of shutdown all wellfield lines were drained. Even though the wellfield was some five years old and had not been operated for four years, the equipment performed satisfactorily and allowed the entire eleven acre wellfield to be successfully restored. The data from the ten restoration sampling wells (see Section 5) confirmed that no contaminated pockets of groundwater were left in the production zone aquifer.

ATTACHMENT (1)

RESTORATION WATER QUALITY DATA FOR STABILITY PERIOD

BISON BASIN DECOMMISSIONING PROJECT

RESTORATION WATER QUALITY DATA FOR STABILITY PERIOD

Restoration Sampling Well No. RSW P-16
[mg/l unless otherwise noted]

('' means not detected at value indicated)
(N/A means not analyzed)

PARAMETER	HIGHEST BASELINE	DRINKING WATER	TARGET VALUE	10/22/87	11/24/87	11/24/87 (Split)	12/22/87	01/23/88	02/23/88
TDS	1812	500	1812	548	572	622	652	662	748
Sp. Cond. (umhos/cm)	2200								
Sodium	495		495	188	210	206	217	235	239
Potassium	16		16	2.3	3.5	1.3	3.4	2.9	2.7
Calcium	62		500	21.9	15.4	15.5	22.0	19.6	25.9
Magnesium	8		250	1.9	1.6	1.6	2.1	2.3	6.6
Sulfate	1100		1100	109	113	112	135	159	173
Chloride	52	250	250	136	143	123	138	138	145
Carb. plus Bicarb.	238		500	187	223	221	234	257	271
		(Total Carbonate)							
pH (pH units) Lab.	11.4		11.4	7.67	8.04	8.03	7.69	7.55	7.69
pH (pH units) site				N/A	7.14	7.14	7.24	7.39	7.42
Aluminum	< 0.1		< 0.1	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Ammonia (as N)	2.9		2.9	0.10	0.11	0.09	0.25	0.11	0.09
Arsenic	< 0.04	0.05	< 0.04	< 0.040	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Barium	< 0.05	1.0	1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	0.38	0.75	0.38	0.50	0.50	0.50	0.50	0.50	0.50
Cadmium	< 0.02	0.01	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chromium	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Copper	< 0.01	1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	1.38	1.4 to 2.4	1.38	1.5	1.7	1.7	1.9	1.60	1.60
Iron	0.13	0.30	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Lead	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	< 0.01	0.05	< 0.01	0.06	0.03	0.03	0.04	0.04	0.05
Mercury	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Molybdenum	< 0.05		0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.39	10.0	10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrite (as N)	< 0.01	1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium	< 0.02		0.02	0.007	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01
Uranium (as U308)	0.04		5.0	0.0381	0.117	0.0936	0.102	0.121	0.169
Vanadium	< 0.1		< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Zinc	< 0.01	5	5.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Radium (pCi/l)	419.3		12.1	29.4 +/- 1.5	20.2	18.8	16.1	22.3	28.3

RESTORATION WATER QUALITY DATA FOR STABILITY PERIOD

Restoration Sampling Well No. RSW A-38
(µg/l unless otherwise noted)

(" means not detected at value indicated)
(N/A means not analyzed)

PARAMETER	HIGHEST BASELINE	DRINKING WATER	TARGET VALUE	10/22/87	11/24/87	12/22/87	12/22/87 Split	01/23/88	02/23/88
TDS	1812	500	1812	804	870	902	900	898	950
Sp. Cond. (µmhos/cm)	2200								
Sodium	495		495	295	306	307	310	313	319
Potassium	16		16	3.6	4.5	4.0	4.1	3.9	3.4
Calcium	62		500	15.3	16.9	17.3	17.4	17.8	17.0
Magnesium	8		250	3.1	4.5	4.2	3.7	4.1	5.0
Sulfate	1100		1100	205	217	221	222	226	231
Chloride	52	250	250	176	188	184	185	183	192
Carb. plus Bicarb.	238		500	264	290	283	290	300	308
			(Total Carb.)						
pH (pH units) Lab.	11.4		11.4	7.48	7.73	7.24	7.07	7.13	7.22
pH (pH units) site				N/A	7.11	6.85		6.89	6.58
Aluminum	< 0.1		< 0.1	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Ammonia (as N)	2.9		2.9	0.10	0.12	0.17	0.40	0.11	0.09
Arsenic	< 0.04	0.05	< 0.04	0.073	0.07	0.06	0.05	0.063	0.07
Barium	< 0.05	1.0	1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	0.38	0.75	0.38	0.50	< 0.10	0.50	0.50	0.50	0.50
Cadmium	< 0.02	0.01	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chromium	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Copper	< 0.01	1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	1.38	1.4 to 2.4	1.38	1.4	1.3	1.3	1.5	1.30	1.35
Iron	0.13	0.30	0.13	0.33	0.43	0.40	0.40	0.50	0.58
Lead	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	< 0.01	0.05	< 0.01	0.03	0.03	0.03	0.03	0.04	0.03
Mercury	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Molybdenum	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.39	10.0	10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrite (as N)	< 0.01	1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium	< 0.02		0.02	< 0.001	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01
Uranium (as U308)	0.04		5.0	0.514	0.602	0.651	0.651	0.526	0.588
Vanadium	< 0.01		< 0.01	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Zinc	< 0.01	5	5	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Radium 226 (pCi/l)	419.3		165.8	134.4 +/- 3.1	118.9	69.6	94.4	106.2	124.9

BISON BASIN DECOMMISSIONING PROJECT

RESTORATION WATER QUALITY DATA FOR STABILITY PERIOD

Restoration Sampling Well No. (mg/l unless otherwise noted)	RSW B-5	["(" means not detected at value indicated) (N/A means not analyzed)							
PARAMETER	HIGHEST BASELINE	DRINKING WATER	TARGET VALUE	10/22/87	11/24/87	12/22/87	01/23/88	01/23/88 Split	02/23/88
TDS	1812	500	1812	706	712	754	716	730	752
Sp. Cond. (umhos/cm)	2200								
Sodium	495		495	255	252	252	246	250	254
Potassium	16		16	3.6	4.3	4.3	3.8	3.8	4.3
Calcium	62		500	24.8	23.7	24.7	23.4	23.4	22.3
Magnesium	8		250	4.0	4.7	5.1	4.5	4.4	5.2
Sulfate	1100		1100	151	139	145	138	140	141
Chloride	52	250	250	148	157	149	144	143	148
Carb. plus Bicarb.	238		500 (Total Carb.)	308	315	323	318	322	330
pH (pH units) Lab.	11.4		11.4	7.83	8.28	7.74	7.87	7.85	7.77
pH (pH units) site				N/A	7.29	7.26	7.51		7.10
Aluminum	< 0.1		< 0.1	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Ammonia (as N)	2.9		2.9	0.09	0.10	0.15	0.11	0.11	0.12
Arsenic	< 0.04	0.05	< 0.04	< 0.040	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Barium	< 0.05	1.0	1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	0.38	0.75	0.38	0.05	0.50	0.50	0.50	0.50	0.50
Cadmium	< 0.02	0.01	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chromium	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Copper	< 0.01	1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	1.38	1.4 to 2.4	1.38	1.5	1.5	1.5	1.40	1.45	1.40
Iron	0.13	0.30	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Lead	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	< 0.01	0.05	< 0.01	0.06	0.05	0.05	0.05	0.05	0.05
Mercury	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Molybdenum	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.39	10.0	10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrite (as N)	< 0.01	1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium	< 0.02		0.02	< 0.001	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01
Uranium (as U308)	0.04		5	0.333	0.378	0.467	0.342	0.327	0.3001
Vanadium	< 0.01		< 0.01	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Zinc	< 0.01	5	5	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Radium (pCi/l)	419.3		72.3	99.8 +/- 2.7	83.9	68.3	75.3	78.7	92.0

BISON BASIN DECOMMISSIONING PROJECT

RESTORATION WATER QUALITY DATA FOR STABILITY PERIOD

Restoration Sampling Well No. RSW 8-50
(mg/l unless otherwise noted)

('' means not detected at value indicated)
(N/A means not analyzed)

PARAMETER	HIGHEST BASELINE	DRINKING WATER	TARGET VALUE	10/22/87	11/24/87	12/22/87	01/23/88	02/23/88
TDS	1812	500	1812	800	732	712	672	704
Sp. Cond. (umhos/cm)	2200							
Sodium	495		495	294	253	254	236	248
Potassium	16		16	3.3	4.0	3.0	4.7	3.2
Calcium	62		500	14.3	9.6	9.8	7.9	9.0
Magnesium	8		250	4.0	2.2	2.1	2.1	2.5
Sulfate	1100		1100	256	169	161	155	155
Chloride	52	250	250	158	156	151	148	155
Carb. plus Bicarb.	238		500 (Total Carb.)	262	235	242	210	224
pH (pH units) Lab.	11.4		11.4	7.49	7.78	7.37	7.17	7.32
pH (pH units) site				N/A	6.93	6.81	6.95	6.85
Aluminum	< 0.1		< 0.1	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10
Ammonia (as N)	2.9		2.9	0.12	0.12	0.31	0.17	0.12
Arsenic	< 0.04	0.05	< 0.04	0.074	< 0.04	0.06	0.08	0.08
Barium	< 0.05	1.0	1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	0.38	0.75	0.38	0.50	0.50	0.50	0.50	0.50
Cadmium	< 0.02	0.01	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Chromium	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Copper	< 0.01	1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	1.38	1.4 to 2.4	1.38	1.5	1.7	1.9	1.70	1.80
Iron	0.13	0.30	0.13	0.10	0.12	0.20	< 0.10	0.14
Lead	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	< 0.01	0.05	< 0.01	0.01	< 0.01	0.01	0.01	0.01
Mercury	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Molybdenum	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.39	10.0	10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrite (as N)	< 0.01	1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium	< 0.02		0.02	< 0.001	< 0.02	< 0.02	< 0.02	< 0.04
Uranium (as U308)	0.04		5	0.306	0.368	0.130	0.316	0.0446
Vanadium	< 0.1		< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Zinc	< 0.01	5	5	0.01	0.02	< 0.01	0.01	< 0.01
Radium (pCi/l)	419.3		44.91	32.9 +/- 1.6	25.5	21.4	18.1	26.4

ATTACHMENT (2)

ENERGY LABORATORY ANALYTICAL REPORT

(February 23, 1988)

WATER ANALYSIS REPORT-ALTAIR RESOURCES, INC.Project: **Bison Basin Decommission Project**

Sample I.D.:	Well #P-16	Well #A-38	Well #B-5	Well #B-50	
Sample Date:	02-23-88	02-23-88	02-23-88	02-23-88	
Report Date:	03-21-88	03-21-88	03-21-88	03-21-88	Det. Limit
Sample Number:	88-1768	88-1769	88-1770	88-1771	& Range

MAJOR IONS mg/l:

Ca	25.9	17.0	22.3	9.0	0.05
Mg	5.6	5.0	5.2	2.5	0.01
Na	239	319	254	248	0.05
K	2.7	3.4	4.3	3.2	0.10
CO3	0	0	0	0	0.10
HCO3	271	308	330	224	0.10
SO4	173	231	141	155	0.50
Cl	145	192	148	155	0.10
NH4 (N)	0.09	0.09	0.12	0.12	0.01
NO2 (N)	<1.0	<1.0	<1.0	<1.0	1.0
NO3 (N)	<1.0	<1.0	<1.0	<1.0	1.0
F	1.60	1.35	1.40	1.80	0.10
SiO2	6.6	10.5	6.2	12.8	1.00
TDS @ 180 C	749	950	752	704	1.0
Alk-CaCO3	222	253	270	184	0.1
pH (units)	7.69	7.22	7.77	7.32	1.14

TRACE METALS mg/l:

Al	<0.10	<0.10	<0.10	<0.10	0.1
As	<0.04	0.07	<0.04	0.08	0.04
Ba	<0.05	<0.05	<0.05	<0.05	0.05
B	0.50	0.50	0.50	0.50	0.1
Cd	<0.02	<0.02	<0.02	<0.02	0.02
Cr	<0.01	<0.01	<0.01	<0.01	0.01
Cu	<0.01	<0.01	<0.01	<0.01	0.01
Fe	<0.10	0.58	<0.10	0.14	0.1
Pb	<0.05	<0.05	<0.05	<0.05	0.05
Mn	0.05	0.03	0.05	0.01	0.01
Hg	<0.001	<0.001	<0.001	<0.001	0.001
Mo	<0.05	<0.05	<0.05	<0.05	0.05
Ni	<0.05	<0.05	<0.05	<0.05	0.05
Se	<0.01	<0.01	<0.01	<0.01	0.01
V	<0.10	<0.10	<0.10	<0.10	0.1
Zn	<0.01	<0.01	<0.01	<0.01	0.01

RADIOMETRIC pCi/l:

U (mg/l)	0.169	0.588	0.3001	0.0446	0.1
Ra226	28.3	124.9	92.0	26.4	0.20
Ra Prec. +/-	1.3	2.8	2.4	1.3	

Q.A. DATA:

Anion meq:	12.22	15.34	12.59	11.36	
Cation meq:	12.31	15.22	12.70	11.52	
A/C Balance:	0.992	1.008	0.991	0.986	0.95-1.05
WYDEQ A/C Bal.X	0.38	-0.40	0.43	0.69	-5 - +5
Calc. TDS mg/l:	737	935	752	704	
TDS-A/C Bal:	1.015	1.016	1.000	1.000	0.90-1.10

Q.A. MANAGER: *LL Kauting*
ENERGY LABORATORIES, INC.

WATER ANALYSIS REPORT-ALTAIR RESOURCES, INC.

Project: **Bison Basin Decommission Project**

Sample I.D.:	Well #A-38	Well #B-5	Well #B-50	Well #C-38	Well #D-16	
Sample Date:	12-22-87	12-22-87	12-22-87	12-22-87	12-22-87	
Report Date:	01-18-88	01-18-88	01-18-88	01-18-88	01-18-88	Det. Limit
Sample Number:	87-16214	87-16215	87-16216	87-16217	87-16218	& Range

MAJOR IONS mg/l:

Ca	17.3	24.7	9.8	17.4	22.0	0.05
Mg	4.2	5.1	2.1	3.7	2.1	0.01
Na	307	252	254	310	217	0.05
K	4.0	4.3	3.0	4.1	3.4	0.10
CO ₃	0	0	0	0	0	0.10
HCO ₃	283	323	242	290	234	0.10
SO ₄	221	145	161	222	135	0.50
Cl	194	149	151	185	138	0.10
NH ₄ (N)	0.17	0.15	0.31	0.40	0.25	0.01
NO ₂ (N)	<1.0	<1.0	<1.0	<1.0	<1.0	1.0
NO ₃ (N)	<1.0	<1.0	<1.0	<1.0	<1.0	1.0
F	1.3	1.5	1.9	1.5	1.9	0.10
SiO ₂	10.7	6.4	12.8	10.7	6.4	1.00
TDS @ 100 C	902	754	712	900	652	1.0
Alk-CaCO ₃	232	264	198	238	192	0.1
pH (units)	7.24	7.74	7.37	7.07	7.69	1.14

TRACE METALS mg/l:

Al	<0.10	<0.10	<0.10	<0.10	<0.10	0.1
As	0.06	<0.04	0.06	0.05	<0.04	0.04
Ba	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
B	0.50	0.50	0.50	0.50	0.50	0.1
Cd	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
Cr	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Cu	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Fe	0.40	<0.10	0.20	0.40	<0.10	0.1
Pb	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Mn	0.03	0.05	0.01	0.03	0.04	0.01
Hg	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Mo	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Ni	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Se	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
V	<0.10	<0.10	<0.10	<0.10	<0.10	0.1
Zn	<0.01	<0.01	<0.01	<0.01	<0.01	0.01

RADIOMETRIC pCi/l:

U238	0.651	0.467	0.130	0.651	0.102	0.1
Ra226	69.6	68.3	21.4	94.4	16.1	0.10
Ra Prec. +/-	1.9	1.9	1.6	2.4	0.9	

Q.A. DATA:

Anion meq:	14.50	12.59	11.67	14.67	10.64	
Cation meq:	14.67	12.73	11.79	14.76	10.80	
A/C Balance:	0.988	0.989	0.990	0.994	0.985	0.95-1.05
WYDER A/C Bal. %	0.60	0.54	0.49	0.31	0.77	-5 - +5
Calc TDS mg/l:	893	751	718	901	644	
TDS A/C Bal:	1.010	1.004	0.992	0.978	1.013	0.90-1.10

Q.A. MANAGER: *L.A. Kuehling*
ENERGY LABORATORIES, INC.