

APPENDIX A
NOTICE OF VIOLATION

Atlas Minerals
Moab Uranium Mill

Docket No.: 40-3453

During an inspection conducted on August 13, 1987, it appears that certain of your activities were not conducted in conformance with regulations and to an Order of the Commission. Based on the results of the inspection and in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1987), the following violations were identified:

- a. Title 10, Code of Federal Regulations, Part 40, Appendix A, Criterion 8 requires, in part, that operators develop written operating procedures for the control of blowing tailings.

Contrary to this requirement, the licensee has not developed a comprehensive written procedure to assure the mitigation of blowing tailings in a timely manner.

This is a Severity Level IV Violation (Supplement VI)

- b. Item IV B of the USNRC Order dated July 31, 1987 states, in part, that Atlas shall not discharge any liquids to the tailings impoundment without prior written approval of the NRC.

Contrary to this requirement Atlas discharged liquids to the tailings impoundment from July 31, 1987 to August 3, 1987 and from August 7, 1987 to August 10, 1987 without the prior approval of the NRC.

This is a Severity Level IV Violation (Supplement VI)

Pursuant to the provisions of 10 CFR 2.201, Atlas Minerals is hereby required to submit to this office within 30 days of the date of the letter transmitting this Notice, a written statement or explanation in reply, including for each violation:

1. the reason for the violation, if admitted;
2. the corrective steps which have been taken and the results achieved;
3. the corrective steps which will be taken to avoid further violations, and

9803130363 980306
PDR FOIA
FIELDS98-66 PDR

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4. the date when full compliance will be achieved.

When good cause is shown, consideration will be given to extending the response time.

Dated at NRC, Region IV, Uranium Recovery Field Office, this 18th day of September, 1987.

/s/

Harry J. Pettengill, Chief
Licensing Branch 2
Uranium Recovery Field Office
Region IV

0400345374

17-13

MD

RETURN ORIGINAL TO PDR, HQ

TECHNICAL RESPONSE
FOR GROUND WATER
DETECTION MONITORING PROGRAM

(Letter Dated March 9, 1988 - Mr. Edward F. Hawkins)

Prepared for:

Nuclear Regulatory Commission
Region IV
Uranium Recovery Field Office
Box 28235
Denver, Colorado 80225

Prepared by:

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April 28, 1988

PROJECT NUMBER: 103-004

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ENECOTEC

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Appendix A List of Hazardous Constituents

1.0 INTRODUCTION

The following technical report presents a revised detection monitoring program pursuant to Atlas Minerals (Atlas) meeting held with the Nuclear Regulatory Commission (NRC) on April 14, 1988. The response has also been prepared to address the technical issues addressed in NRC's letter dated March 9, 1988. The proposed program has been structured to implement a water quality monitoring program that complies with Appendix A to 10CFR40 and the regulatory requirements specified by 40CFR192.

The purpose of the detection monitoring program is to determine if ground water seepage from the existing tailings pond is conveying hazardous constituents to the uppermost aquifer adjacent to the pond. The proposed program has been designed to determine whether background water quality has been affected by uranium waste disposal activities and to determine whether this impact is environmentally significant. Significance, as defined by regulation, is determined by statistically comparing ground water quality from a well downgradient from the tailings pond and comparing this information to data obtained from a background ground water observation well. Significance is also determined by comparing ground water quality to:

- o NRC's secondary ground water protection standards; and
- o NRC's approved ground water quality "Alternative Concentration Limits".

2.0 BACKGROUND

2.1 Regulatory Background

The NRC, on June 5, 1987 pursuant to 40CFR192, requested Atlas Minerals to implement a ground water detection monitoring program. In accordance with 40CFR192, NRC stated the provision required by 40CFR 264.92; (Groundwater Protection Standards), 264.94 (Concentration Limits); 264.95 (Point of Compliance); and 264.98 (Detection Monitoring), must be implemented. NRC's "detection monitoring" requirements stipulated:

- o "The determination of compliance shall be based upon sampling Well MW-3."
- o "The determination of background levels for the parameters specified in subsection (A) shall be defined by sampling Well ATP-3."
- o "The determination of background levels for the parameters specified in subsection (A) shall be defined by sampling Well ATP-3."

Atlas Minerals implemented the "detection" monitoring program pursuant to NRC stipulations and submitted an annual monitoring report (February 24, 1988) discussing the detection water quality results.

The report concluded:

1. Water quality data is highly variable which precludes the use of standard statistical correlation methods using normal distributed data sets.
2. The ground water monitoring network appears to be inadequate to address currently mandated detection monitoring requirements. The existing background monitoring well (Moab Wash - ATP-3) appears to be located in a different ground water flow regime when compared to the flow regime beneath or adjacent to the tailings dam. The point of compliance monitoring well (MW-3) is completed in the Colorado River alluvium which is believed to preclude the opportunity to statistically compare normally distributed ground water quality data to Moab Wash (ATP-3).

3. The detection monitoring well (MW-3) does not appear to be appropriate for intended purposes. The well is located where other contaminant sources could affect ground water quality.
4. During the development of the historical data base, different laboratory procedures and methods have been used. The effect of changing laboratories cannot be quantified.
5. Recommended Student "T" test statistical methods should not be used to determine the significant water quality difference between MW-3 (Detection Monitoring Well) and ATP-3 (Background Well).

On March 9, 1988 Atlas Minerals received a letter from NRC (Edward F. Hawkins) stating NRC was generally in agreement with the findings of Atlas' February 24, 1988 detection monitoring report and requested Atlas to implement a "compliance monitoring program" pursuant to "amended Appendix A to 10CFR40" with emphasis placed on the approach "to define the concentration and extent of the Criterion 13 hazardous waste constituents in the uppermost aquifer."

On March 29, 1988 EnecoTech Inc. submitted a response to NRC's letter stating the rationale for requiring a "compliance monitoring program" was not technically justified and that the next phase in ground water monitoring should be a revision to the existing "detection monitoring program" to determine whether seepage from the tailings dam is contaminating the uppermost aquifer.

On April 14, 1988 a meeting was held in NRC's Denver Field Office to clarify future detection monitoring compliance issues and to define future monitoring activities. The result of the meeting indicated a modified detection monitoring program is warranted and that additional ground water observation wells must be installed. NRC suggested an additional upgradient well should be installed in the Colorado River alluvium and an additional downgradient well should be installed in an area which would identify contaminants migrating from the pond. NRC also requested Atlas to modify the current parameter list to include potential hazardous parameters believed to be associated with past tailings pond activities.

Atlas accepts the responsibility to establish a technically defensible detection monitoring program and accepts the technical mandate to determine whether the uppermost aquifer is being adversely impacted by

seepage from the existing tailings pond. NRC believes the pond is leaking, however, confirmation that the uppermost aquifer water quality is being degraded has not been demonstrated. According to Criterion 7A (amendment to Appendix A to 10CFR Part 40), the purpose of the detection monitoring program is to "detect leakage of hazardous constituents from the disposal area so that the need to set ground-water protection standards or approved "Alternative Concentration Limits" is monitored. If leakage is detected, the second purpose of the program is to generate data and information needed for the Commission to establish the standards under Criterion 5B."

Atlas has submitted technical data suggesting the tailings pond is leaking, however, historical water quality data collected from observation wells does not indicate the uppermost aquifer has been adversely impacted by hazardous constituents. Since detection ground water monitoring data does not indicate significant changes in quality, Atlas is proposing to implement a technically acceptable and defensible "detection" monitoring program to comply with Criterion 13 and NRC's ground water quality monitoring regulatory program by:

1. Assessing whether hazardous (Criterion 13) constituents have impacted the uppermost aquifer;
2. Establishing a suitable background and downgradient well in the study area;
3. Comparing the results of the new background well water quality values to the new compliance well using the maximum concentration limits shown in Table 5.1 of Appendix A 10CFR40. The maximum values for ground water protection are as follows:

<u>Constituent or Property</u>	<u>Maximum mg/l</u>
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	0.1
Chromium (Cr)	0.05
Lead (Pb)	0.05
Mercury (Hg)	0.002
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004

<u>Constituent or Property</u>	<u>Maximum mg/l</u>
Methoxychlor	0.1
Toxaphene	0.005
2-4 D	0.1
2,4,5-TP Silvex	0.01
Picocuries per liter	
Ra-226 and Ra-228	5
Gross Alpha	15

In addition address the water quality monitoring requirements specified by Criterion 5B(2)(a, b, and c). Criterion 5B(2) requires the licensee to consider;

- (a) Constituents that are reasonably expected to be in or derived from the byproduct material in the disposal area;
- (b) Constituents that have been detected in the ground water in the uppermost aquifer;
- (c) Constituents that are listed in Criterion 13 of this appendix.

4. Considering sampling for the recommended parameter list suggested by NRC as outlined in the letter dated March 9, 1988. The parameter list includes the following:

- o Arsenic (As)
- o Barium (Ba)
- o Beryllium (Be)
- o Cadmium (Cd)
- o Carbon disulfide
- o Chloroform,
- o Cyanide (CN)
- o 1,2-dichloroethane
- o Diethyl phthalate
- o Fluorine (F)
- o Lead (Pb)
- o Mercury (Hg)
- o Naphthalene
- o Nickel (Ni)

- o Radium (Ra) 226- and 228
- o Selenium (Se)
- o Silver (Ag)
- o Thorium (Th)
- o Uranium (U) total
- o Vanadium (V)

2.2 Atlas Minerals Proposed Detection Monitoring Program

2.2.1 Background Detection Monitoring Well

The existing background monitoring well (ATP-3) is not suitable to address regulatory requirements because the well is currently monitoring Moab Wash groundwater, whereas water potentially seeping from the tailings structure would impact the Colorado River groundwater flow regime. Because of technical regulatory difficulties, Atlas is proposing to install a ground water observation well that is located upgradient from the existing tailings dam and located in the aquifer that could be affected by water seeping from the existing tailings pond. The well (Figure 1) will be:

- o Located northeast of the structure;
- o Completed in the Colorado River aquifer; and
- o Located in close proximity to the Colorado River.

2.2.2 Detection Monitoring Well

The existing detection monitoring well (MW-3) has been determined not to be ideally located or suitable to meet regulatory requirements. In order to implement a technically defensible monitoring program, Atlas is proposing to install a well approximately 1000 feet (Figure 1) south east of the existing tailings pond. The well will be located adjacent to the Colorado River downgradient from the existing structure. The location has been chosen to ensure the well will not be disturbed in the event the facility is decommissioned and to ensure the developed water quality database is not adversely compromised during the closure process. The purpose of the well is to sample and identify potential hazardous constituents that may seep and impact the uppermost aquifer downgradient of the facility.

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3.0 PROPOSED WATER QUALITY ANALYTICAL PROGRAM

The purpose of the ground water detection monitoring water quality program is to provide assurance ground water quality is not being adversely impacted by ground water seeping from the existing tailings dam. The selection of representative parameters to be analyzed during this study phase includes constituents that are reasonably expected to be in or derived from the byproduct material in the disposal area; constituents that have been detected in the ground water in the uppermost aquifer; constituents required to comply with NRC 10CFR40 Criterion 13; indicator parameters mandated by 40CFR264.98(a) and parameters suggested by NRC as outlined in the letter dated March 9, 1988.

Utilizing the five criteria discussed in the previous paragraph, a selected water quality parameter list, including currently mandated water quality parameters, has been developed for the revised "detection" monitoring program. The recommended program is based on the historical water quality data base and water quality data recently collected by NRC.

Atlas Minerals has collected, inventoried and assessed ground water quality data since 1979 and has routinely submitted annual water quality reports to the NRC. Atlas' collected data, primarily characterizes inorganic and radionuclide water quality site conditions and provides a basic understanding of the hydrogeologic characteristics associated with the tailings dam. Following the promulgation of 40CFR192 and the adoption of a monitoring strategy outlined by 40CFR264, Atlas is required to consider modifying the existing water quality program to include additional inorganic and other hazardous organic constituents.

In the fall of 1987, NRC obtained tailings impoundment samples "to verify the potential existence...of families of hazardous constituents as defined in Appendix VIII to 40 CFR 261". According to a letter dated October 21, 1987, NRC obtained representative tailings water quality samples using required containers and preservation techniques; using EPA approved sampling, preservation and analytical procedures (EPA Methods 3510, 8010, 8240 and 8270); and delivered the samples to an approved laboratory using required chain-of-custody procedures. NRC samples were analyzed for the presence of organics, inorganics and radionuclides. The NRC sample results are attached. NRC tailings pond sample results indicates organics do not appear to be a water quality issue, however radionuclide and inorganic concentrations in the pond may be a source to affect ground

water quality in the uppermost aquifer. Constituents that are reasonably expected to be in or derived from the byproduct material in the disposal area based on NRC sample results include the following:

- o Arsenic (As)
- o Cadmium (Cd)
- o Copper (Cu)
- o Iron (Fe)
- o Manganese (Mn)
- o Molybdenum (Mo)
- o Nitrate/Nitrite (NO_3/NO_2)
- o Sulfate (SO_4)
- o Uranium (U)
- o Vanadium (V)
- o Zinc (Zn)

Constituents that have been detected in the ground water in the uppermost aquifer adjacent to the tailings pond include the following:

- Chloride (Cl)
- o Copper (Cu)
- o Iron (Fe)
- o Nitrate (NO_3)
- o Sulfate (SO_4)
- o Total Dissolved Solids (TDS)

Constituents required to comply with NRC 10CFR40 Criterion 13 include the secondary ground water protection standards required by Criterion 5 (refer to Table LC - Maximum Values for Ground Water Protection 10CFR40 Appendix A - Page 5 and 6 of this report) where the concentration limits can not be exceeded. The list of hazardous constituents are listed in Appendix A 10CFR40. Parameters required to comply with this requirement are included in Atlas' proposed program and is consistent with the sampling results obtained by NRC.

In addition to considering the previously mentioned parameters, NRC has requested Atlas consider sampling specific parameters that have been a concern at other NRC licensed facilities. The parameters of concern are outlined in NRC's letter dated March 9, 1988.

Using the existing data base, the necessary parameters to be analyzed in the revised detection monitoring program to comply with NRC applicable regulations include:

**PROPOSED WATER QUALITY DETECTION
MONITORING WELL PARAMETER LIST**

<u>Parameter</u>	<u>Rationale</u>
Arsenic (As)	Tailings Pond
Barium (Ba)	Tailings Pond/Treatment Ponds
Cadmium (Cd)	Tailings Pond
Chloride (Cl)	Tailings Pond/Upper Aquifer
Copper (Cu)	Upper Aquifer
Iron (Fe)	Upper Aquifer
Nitrate (NO ₃)	Upper Aquifer
Manganese (Mn)	Tailings Pond
Molybdenum (Mo)	Tailings Pond
Selenium	Tailings Pond/Upper Aquifer
Sodium	Tailings Pond/Upper Aquifer
Sulfate	Tailings Pond/Upper Aquifer
Thorium (Th)	Tailings Pond/Upper Aquifer
Total Dissolved Solids	Tailings Pond/Upper Aquifer
Uranium (U) total	Tailings Pond/Upper Aquifer
Vanadium (V)	Tailings Pond/Upper Aquifer
Zinc (Zn)	Tailings Pond
Picocuries per liter	
Ra-226 and Ra-228	Tailings Pond/Upper Aquifer
Gross Alpha	Tailings Pond/Upper Aquifer

During the revised detection ground water monitoring program, samples obtained from the newly established background and downgradient wells will be collected in accordance with 3510, 8010, 8240 and 8270 and appropriate water quality chain-of-custody procedures will be used.

Chemical constituents considered for analysis but were not included in the sampling program are as follows:

Parameter

Rationale

Metals:

Beryllium (Be)	Not Found in Tails or in Upper Aquifer
Chromium (Cr)	Not Found in Tails or in Upper Aquifer
Cyanide (CN)	Not Found in Tails or in Upper Aquifer
Fluorine (F)	Not Found in Tails or in Upper Aquifer
Lead (Pb)	Not Found in Tails or in Upper Aquifer
Mercury (Hg)	Not Found in Tails or in Upper Aquifer
Nickel (Ni)	Not Found in Tails or in Upper Aquifer
Silver	Not Found in Tails or in Upper Aquifer

Organics:

Carbon disulfide	Not Found in Tails
Chloroform,	Not Found in Tails
1,2-dichlorethane	Not Found in Tails
Diethyl phthalate	Not Found in Tails
Naphthalene	Not Found in Tails

Pesticides/Herbicides:

Endrin	Not included in waste stream
Lindane	Not included in waste stream
Methoxychlor	Not included in waste stream
Toxaphene	Not included in waste stream
2-4 D	Not included in waste stream
2,4,5-TP Silvex	Not included in waste stream

4.0 SUMMARY

The revised detection monitoring program will consist of installing two ground water observation wells. The wells will be completed using an acceptable NRC well design, construction and completion methods. All data collected from these wells will be obtained pursuant NRC requirements.

Since the existing detection monitoring program is being technically modified, Atlas will be abandoning wells ATP-1; ATP-2; ATP-3; and MW-3. Water quality data will be obtained from the existing, as modified, monitoring well network (MW-1R; and MW-2R) were water quality samples will only be analyzed for parameters currently being required by NRC. Water quality samples from the newly established detection monitoring system will be obtained on a quarterly basis, using standard procedures and protocols. Water quality laboratory results (refer to Proposed Water Quality Detection Monitoring Well Parameter List) will be entered into a computer database and when required, data reports will be submitted to NRC.

APPENDIX A

LIST OF HAZARDOUS CONSTITUENTS

Semi-volatile Organic Analysis Data

EPA SAMPLE NO.

Test Number: 91387

ATLAS 1

Procedure Number: EPA-625

Matrix: LIQUID

Notes:

Frequency:

Charge Number: 33453837

Customer Name: G R KONWINSKI

Lab Sample ID: 870714-043

Sample wt/vol: 940 ML

Lab File ID: C915A03A

Date Sampled:

Date Received 14-Jul-1987 09:03

Moisture: not dec.

dec:

Date Analyzed: 15-Sep-1987

Material Description

Date of Report: 2-OCT-87

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg)

ug/L

Q

105-95-2	phenol	10	U
111-44-4	bis(2-chloroethyl) ether	10	U
95-57-8	2-chlorophenol	10	U
541-73-1	1,3-dichlorobenzene	10	U
106-46-7	1,4-dichlorobenzene	10	U
100-51-6	benzyl alcohol	10	U
95-50-1	1,2-dichlorobenzene	10	U
95-48-7	2-methylphenol	10	U
105-60-1	bis(2-chloroisopropyl) ether	10	U
106-44-5	4-methylphenol	10	U
621-64-7	n-nitroso-di-n-propylamine	10	U
67-72-1	hexachloroethane	10	U
98-95-	nitrobenzene	10	U
78-59-1	isophorone	10	U
83-75-5	2-nitrophenol	10	U
105-67-9	2,4-dimethylphenol	10	U
65-85-0	benzoic acid	50	U
111-91-1	bis(2-chloroethoxy) methane	10	U
120-83-2	2,4-dichlorophenol	10	U
120-82-1	1,2,4-trichlorobenzene	10	U
91-20-3	naphthalene	10	U
106-47-8	4-chloroaniline	10	U
87-63-3	hexachlorobutadiene	10	U
59-50-7	4-chloro-3-methylphenol	10	U
91-57-6	2-methylnaphthalene	10	U
77-47-4	hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-trichlorophenol	10	U
95-95-4	2,4,5-trichlorophenol	50	U
91-58-7	2-chloronaphthalene	10	U
88-74-4	2-nitroaniline	50	U
131-11-3	diethylphthalate	10	U
200-96-8	acenaphthylene	10	U
600-70-2	2,6-dinitrotoluene	10	U

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Test Number: 91387

ATLAS 1

Procedure Number: EPA-625

Matrix: LIQUID

Emission:

Frequency:

Charge Number: 33453937

Customer Name: G F KONWINSKI

Lab Sample ID: E70714-043

Sample wt/vol: 5 ML

Lab File ID: G716A03A

Date Sampled:

Date Received 14-Jul-1987 09:03

Moisture: not dec.

dec:

Date Analyzed: 16-Jul-1987

Serial Description

Date of Report: 2-OCT-87

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg)

ug/L

Q

74-87-3-----	chloromethane	10	U
74-83-9-----	bromomethane	10	U
75-01-4-----	vinyl chloride	10	U
75-00-3-----	chloroethane	10	U
75-09-2-----	methylene chloride	11	32
67-64-1-----	acetone	11	32
75-15-0-----	carbon disulfide	5	U
75-35-4-----	1,1-dichloroethene	5	U
75-34-3-----	1,1-dichloroethane	5	U
540-59-0-----	1,2-dichloroethene (total)	5	U
67-66-3-----	chloroform	5	U
107-06-2-----	1,2-dichloroethane	5	U
78-33-3-----	2-butanone	10	U
71-55-6-----	1,1,1-trichloroethane	5	U
56-23-5-----	carbon tetrachloride	5	U
108-05-4-----	vinyl acetate	10	U
75-27-4-----	bromodichloromethane	5	U
78-27-5-----	1,2-dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	trichloroethene	5	U
124-48-1-----	dibromochloromethane	5	U
79-00-5-----	1,1,2-trichloroethane	5	U
71-43-2-----	benzene	5	U
10061-02-06-----	trans-1,3-dichloropropene	5	U
75-25-2-----	bromoform	5	U
108-10-1-----	4-methyl-2-pentanone	10	U
591-78-6-----	2-hexanone	10	U
127-18-4-----	tetrachloroethene	5	U
72-34-5-----	1,1,2,2-tetrachloroethane	5	U
108-88-3-----	toluene	5	U
109-90-7-----	chlorobenzene	5	U
100-41-4-----	ethylbenzene	5	U
100-42-5-----	styrene	5	U
1110-20-7-----	xylene (total)	5	U

Semi-volatile Organic Analysis Data

EPA SAMPLE NO.

Request Number: 91387

ATLAS 1

Procedure Number: EPA-625

Matrix: LIQUID

Series:

Frequency:

Charge Number: 33453437

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Date Sampled:

Date Received 14-Jul-1987 09:03

% Moisture: not dec.

dec:

Date Analyzed: 15-Sep-1987

Serial Description

Date of Report: 2-OCT-87

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
99-09-2	3-nitroaniline	50	U	
83-32-9	acenaphthene	10	U	
51-28-5	2,4-dinitrophenol	50	U	
100-02-7	4-nitrophenol	50	U	
132-64-9	dibenzofuran	10	U	
121-14-2	2,4-dinitrotoluene	10	U	
84-66-2	diethylphthalate	10	U	
7005-72-3	4-chlorophenyl-phenylether	10	U	
86-73-7	fluorene	10	U	
100-01-6	4-nitroaniline	50	U	
534-52-1	4,6-dinitro-2-methylphenol	50	U	
86-30-6	N-nitrosodiphenylamine (1)	10	U	
101-55-3	4-bromophenyl-phenylether	10	U	
118-74-1	hexachlorobenzene	10	U	
87-86-5	pentachlorophenol	50	U	
85-01-8	phenanthrene	10	U	
120-12-7	anthracene	10	U	
84-74-2	di-n-butylphthalate	10	U	
206-44-0	fluoranthene	10	U	
129-00-0	pyrene	10	U	
85-68-7	butylbenzylphthalate	10	U	
91-94-1	3,3'-dichlorobenzidine	20	U	
56-55-3	benzo(a)anthracene	10	U	
218-01-9	chrysene	10	U	
117-91-7	bis(2-ethylhexyl)phthalate	10	U	
117-84-0	di-n-octylphthalate	10	U	
205-99-2	benzo(b)fluoranthene	10	U	
207-08-9	benzo(k)fluoranthene	10	U	
50-32-8	benzo(a)pyrene	10	U	
193-39-5	indeno(1,2,3-cd)pyrene	10	U	
53-70-3	dibenz(a,h)anthracene	10	U	
191-24-2	benzo(g,h,i)perylene	10	U	

(1) - Cannot be separated from diphenylamine

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Request Number: 91387

ATLAS 2

Procedure Number: EPA-625

Matrix: LIQUID

Series:

Frequency:

Charge Number: 33453837

Customer Name: G B KONWINSKI

Lab Sample ID: 870714-044

Sample wt/vol: 5 ML

Lab File ID: G716AC9A

Date Sampled:

Date Received 14-Jul-1987 09:03

% Moisture: not dec.

dec:

Date Analyzed: 16-Jul-1987

Serial Description

Date of Report: 2-OCT-87

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
74-87-3	chloromethane		10	U
74-83-9	bromomethane		10	U
75-01-4	vinyl chloride		10	U
75-00-3	chloroethane		10	U
75-09-2	methylene chloride		11	B
67-64-1	acetone		10	B
75-15-0	carbon disulfide		5	U
75-35-4	1,1-dichloroethene		5	U
75-34-3	1,1-dichloroethane		5	U
540-59-0	1,2-dichloroethene (total)		5	U
67-66-3	chloroform		5	U
107-06-2	1,2-dichloroethane		5	U
78-93-3	2-butanone		10	U
71-55-6	1,1,1-trichloroethane		5	U
56-23-5	carbon tetrachloride		5	U
108-05-4	vinyl acetate		10	U
75-27-4	bromodichloromethane		5	U
78-87-5	1,2-dichloropropane		5	U
10061-01-5	cis-1,3-dichloropropene		5	U
79-01-6	trichloroethene		5	U
124-48-1	ditrichloromethane		5	U
79-00-5	1,1,2-trichloroethane		5	U
71-43-2	benzene		5	U
10061-02-06	trans-1,3-dichloropropene		5	U
75-25-2	bromoform		5	U
109-10-1	4-methyl-2-pentanone		10	U
591-78-6	2-hexanone		10	U
127-18-4	tetrachloroethene		5	U
79-34-5	1,1,2,2-tetrachloroethane		5	U
108-88-3	toluene		5	U
105-90-7	chlorobenzene		5	U
100-41-4	ethylbenzene		5	U
100-42-5	styrene		5	U
1330-20-7	xylene (total)		5	U

Semi-volatile Organic Analysis Data

EPA SAMPLE NO.

Test Number: 91387

ATLAS 2

Procedure Number: EPA-625

Matrix: LIQUID

Relies:

Frequency:

Charge Number: 33453037

Donor Name: G B KONWINSKI

Lab Sample ID: 870714-044

Sample wt/vol: 950 ML

Lab File ID: C915AC4A

Date Sampled:

Date Received 14-Jul-1987 09:03

Moisture: not dec.

dec:

Date Analyzed: 15-Sep-1987

Serial Description

Date of Report: 2-OCT-87

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	ug/L	
105-95-2	phenol		10	U
111-44-4	bis(2-chloroethyl) ether		10	U
95-57-8	2-chlorophenol		10	U
541-73-1	1,3-dichlorobenzene		10	U
106-46-7	1,4-dichlorobenzene		10	U
100-51-6	benzyl alcohol		10	U
95-50-1	1,2-dichlorobenzene		10	U
95-48-7	2-methylphenol		10	U
108-60-1	bis(2-chloroisopropyl) ether		10	U
106-44-5	4-methylphenol		10	U
621-64-7	n-nitroso-di-n-propylamine		10	U
67-72-1	hexachloroethane		10	U
98-95-3	nitrobenzene		10	U
78-59-1	isophorone		10	U
98-75-5	2-nitrophenol		10	U
105-67-9	2,4-dimethylphenol		10	U
65-85-0	benzoic acid		50	U
111-91-1	bis(2-chloroethoxy) methane		10	U
120-83-2	2,4-dichlorophenol		10	U
120-82-1	1,2,4-trichlorobenzene		10	U
91-20-3	naphthalene		10	U
106-47-8	4-chloroaniline		10	U
87-68-3	hexachlorobutadiene		10	U
59-50-7	4-chloro-3-methylphenol		10	U
91-57-6	2-methylnaphthalene		10	U
77-47-4	hexachlorocyclopentadiene		10	U
88-06-2	2,4,6-trichlorophenol		10	U
95-95-4	2,4,5-trichlorophenol		50	U
91-58-7	2-chloronaphthalene		10	U
88-74-4	2-nitroaniline		50	U
131-11-3	diethylphthalate		10	U
205-96-8	acenaphthylene		10	U
606-20-2	2,6-dinitrotoluene		10	U

Semi-volatile Organic Analysis Data

EPA SAMPLE NO.

Request Number: 91387

ATLAS 2

Procedure Number: EPA-625

Matrix: LIQUID

Series:

Frequency:

Charge Number: 33453337

Customer Name: G R KONWINSKI

Lab Sample ID: 870714-044

Sample wt/vol: 950 ML

Lab File ID: C915A04A

Date Sampled:

Date Received: 14-Jul-1987 09:03

% Moisture: not dec.

dec:

Date Analyzed: 15-Sep-1987

1. Serial Description

Date of Report: 2-OCT-87

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg)

ug/L

2

99-09-2-----	3-nitroaniline	50	U
83-32-9-----	acenaphthene	10	U
51-25-5-----	2,4-dinitrophenol	50	U
100-02-7-----	4-nitrophenol	50	U
132-64-3-----	dibenzofuran	10	U
121-14-2-----	2,4-dinitrotoluene	10	U
84-66-2-----	diethylphthalate	10	U
7005-72-3-----	4-chlorophenyl-phenylether	10	U
86-73-7-----	fluorene	10	U
100-01-6-----	4-nitroaniline	50	U
534-52-1-----	4,6-dinitro-2-methylphenol	50	U
86-30-6-----	n-nitrosodiphenylamine (1)	10	U
101-55-3-----	4-bromophenyl-phenylether	10	U
118-74-1-----	hexachlorobenzene	10	U
87-86-5-----	pentachlorophenol	50	U
85-01-8-----	phenanthrene	10	U
120-12-7-----	anthracene	10	U
84-74-2-----	di-n-butylphthalate	10	U
206-44-0-----	fluoranthene	10	U
129-00-0-----	pyrene	10	U
85-68-7-----	butylbenzylphthalate	10	U
91-94-1-----	3,3'-dichlorobenzidine	20	U
56-55-3-----	benzo(a)anthracene	10	U
218-01-9-----	chrysene	10	U
117-61-7-----	bis(2-ethylhexyl)phthalate	10	U
117-34-0-----	di-n-octylphthalate	10	U
205-99-2-----	benzo(b)fluoranthene	10	U
207-08-9-----	benzo(k)fluoranthene	10	U
50-12-8-----	benzo(a)pyrene	10	U
193-39-5-----	indeno(1,2,3-cd)pyrene	10	U
53-70-3-----	dibenz(a,h)anthracene	10	U
171-24-2-----	benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from diphenylamine

Oak Ridge National Laboratory
Analytical Chemistry Division
Results of Analyses
Environmental Analysis Laboratories

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CART #0001281
EAL6754

Date Received
Charge number
Series
Date of Report

10-Aug-1967 09:53
33453817
2-OCT-67

Approved By FM [Signature]
Date 10-2-67

Steerer ID
TLAS 1

Sample No. 1

DIS AS	DIS MC	DIS SE	DIS TL	ITM	ITOC	ITOT AS	ITOT MC	ITOT SE
10.72	14 0.0005	10.23	10.03	11543	11.5	11.7	14 0.0005	10.40

ITOT TL
10.06

TL 1 2

Sample No. 2

DIS AS	DIS MC	DIS SE	DIS TL	ITM	ITOC	ITOT AS	ITOT MC	ITOT SE
11.6	14 0.0005	10.45	10.07	11523	11.3	11.6	14 0.0005	10.40

ITOT TL
10.06

ITOT TL
14 0.01

ITOT TL
14 0.01

ITOT TL
11.6

ITOT TL
10.43

U.S. ARMY NATIONAL LABORATORY
ANALYTICAL CHEMISTRY DIVISION
RESULTS OF ANALYSES
LITHIUM FLUORIDE HALOGEN ANALYSIS

14-JUL-1967 11:11
33055637
CAPS 6070
24-AUG-67

DATE RECEIVED
CHANGE NUMBER
SERIES
DATE OF REPORT

LABORATORY NAME
LITHIUM
SOLUTIONS
RESULTS ADJ. IN 1967A

ID	ANALYST NAME	IN-210	IN-230	TOTAL NADUM
1	TOTAL	31 +/- 6	14-230 1-253 +/- 11.3	21 +/- 6
1	GLSS	31 +/- 6	14-230 1-253 +/- 11.3	20 +/- 6
TOTAL	IN-210	31 +/- 6	14-230 1-253 +/- 11.3	17 +/- 3
GLSS	IN-210	32 +/- 6	14-230 1-253 +/- 11.3	21 +/- 6

5.116
(George I. Kelly)
14 July 1967

English
1401 Building
Suite 400
Bureau Co 90802
Ann George Johnson

1000' w. of pump station

[illegible]

13-149 ATLAS-2 TOTAL

200' north of pump station

As	420.	MG/L	EPA 200.7	14-AUG-1987
Al	2.0	MG/L	EPA 200.7	14-AUG-1987
Fe	< 2.0	MG/L	EPA 200.7	14-AUG-1987
Mn	< 0.30	MG/L	EPA 200.7	14-AUG-1987
Na	0.13	MG/L	EPA 200.7	14-AUG-1987
Ca	250.	MG/L	EPA 200.7	14-AUG-1987
CU	0.45	MG/L	EPA 200.7	14-AUG-1987
CO	1.3	MG/L	EPA 200.7	14-AUG-1987
CH	11.	MG/L	EPA 200.7	14-AUG-1987
Fe	500.	MG/L	EPA 200.7	14-AUG-1987
LA	< 7.5	MG/L	EPA 200.7	14-AUG-1987
LI	< 2.5	MG/L	EPA 200.7	14-AUG-1987
MB	490.	MG/L	EPA 200.7	14-AUG-1987
ME	20.	MG/L	EPA 200.7	14-AUG-1987
MO	< 1.2	MG/L	EPA 200.7	14-AUG-1987
NI	1000.	MG/L	EPA 200.7	14-AUG-1987
NO	< 1.5	MG/L	EPA 200.7	14-AUG-1987
SI	< 7.5	MG/L	EPA 200.7	14-AUG-1987
TI	< 5.0	MG/L	EPA 200.7	14-AUG-1987
UP	17.2	MG/L	EPA 200.7	14-AUG-1987
VA	50.	MG/L	EPA 200.7	14-AUG-1987
ZN	< 0.50	MG/L	EPA 200.7	14-AUG-1987

13-149 ATLAS-2 UTS
1000' N of pump station

As	< 0.50	MG/L	EPA 200.7	14-AUG-1987
Al	45.	MG/L	EPA 200.7	14-AUG-1987
Fe	< 0.05	MG/L	EPA 200.7	14-AUG-1987
Na	0.25	MG/L	EPA 200.7	14-AUG-1987
Ca	0.14	MG/L	EPA 200.7	14-AUG-1987
CU	< 500	MG/L	EPA 200.7	14-AUG-1987
CO	310.	MG/L	EPA 200.7	14-AUG-1987
CH	0.49	MG/L	EPA 200.7	14-AUG-1987
Fe	170	MG/L	EPA 200.7	14-AUG-1987
LA	1.3	MG/L	EPA 200.7	14-AUG-1987
LI	< 5	MG/L	EPA 200.7	14-AUG-1987
MB	1.3	MG/L	EPA 200.7	14-AUG-1987
ME	11.	MG/L	EPA 200.7	14-AUG-1987

ATLAS-1 DIS

7 weeks 16 hours

14-AUG-1987	EPA 200.7	mg/L	1.0	
14-AUG-1987	EPA 200.7	mg/L	< 0.01	
14-AUG-1987	EPA 200.7	mg/L	< 0.01	
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14-AUG-19				

100 MAY - 2 JUL 1961

[illegible]

