WRc-NSF Ltd

An Investigation of Leaching from Flexible Rising Mains Leading from Borehole Pumps

Final Report to the Drinking Water Inspectorate

DWI 8102/3
AUGUST 2011

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Report No: DWI 8102/3

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AN INVESTIGATION OF LEACHING FROM FLEXIBLE RISING MAINS LEADING FROM BOREHOLE PUMPS

EXECUTIVE SUMMARY

Many water undertakers have used flexible rising mains as the preferred option to fixed piping systems for rising mains leading from borehole pumps. These flexible hoses are usually made from fabric-reinforced polyurethane. They offer several advantages over fixed installations.

Formerly such rising mains were treated as traditional materials under the requirements of Regulation 25(1)(c) of the Water Supply (Water Quality) Regulations 1989. Water undertakers would replace existing flexible rising mains with new lengths of flexible hose as required, on a like for like basis. Regulation 31 of the current Water Supply (Water Quality) Regulations 2000 (2001 in Wales) does not contain a comparable provision for the continued use of product on a 'traditional' basis. This has meant that water undertakers can no longer replace flexible rising mains on a like-for-like basis.

The former Committee for Products and Processes used in Public Water Supply (CPP) received and considered formal applications for approval of flexible rising mains, following the introduction of the new regulations. GC-MS general survey test results obtained from leaching tests undertaken on these products have shown persistent high concentrations of large numbers of unknown organic compounds over the three 72 hour extraction periods of the tests.

The general objective of this project was to analyse samples of water from two sites where flexible rising mains had been in use for some time to determine the quantity and nature of any leachates present. Following this initial sampling, the riser was replaced with a new one and the leachates were monitored over a period of weeks. This work was carried out in co-operation with two water undertakers.

Water companies were contacted to identify those that had flexible rising mains installed and that were willing to co-operate in the project. Two suitable sites were identified – one chalk aquifer and one greensand aquifer. Each of these sites had existing 152 mm (6 inch) diameter flexible rising mains of the same type and manufacturer.

At each of the two identified sampling sites the following general experimental protocol was followed.

- With the existing hose in service, a sample was taken under flowing conditions after one hour's flushing (as a 'control') then a further sample was taken following 72 hour's stagnation.

- The borehole was taken off line, i.e. no longer feeding the public water supply and the flexible riser was replaced with a new section of flexible hose.

- After flushing with water for one hour a control sample was taken. A stagnation period was imposed, after which a sample was taken immediately.

The flushing, stagnation and sampling was repeated to give a time-series over a period of 56 days.

- Samples were analysed for Total Organic Carbon and GC-MS general survey.

At both sites, only low levels of leaching were observed from the original liners that had been in use for many years. After the introduction of new liners, large numbers of unknowns were detected in the stagnation samples. These compounds tended to be present at lower concentrations or were undetectable in samples taken after flushing for 60 minutes.

The major unknowns were identified as a series of oligomers[1] differing in molecular weight by 72 mass units, the main compounds having molecular weights of 288, 360, 432, 504 and 576. Examination of mass spectra provided in earlier test reports on leaching from similar materials showed that these same compounds were present. These compounds are likely to be oligomeric cyclic ethers although their identities cannot be confirmed conclusively due to a lack of pure standards.

Overall there did not appear to be a difference in leaching characteristics between chalk- and greensand-derived waters.

Chemicals were still detected in stagnation samples several weeks after the new liners were installed. This suggests that it would be not be practical or effective for the manufacturer to rinse the risers as part of the manufacturing process.

Concentrations of leached chemicals in samples taken after flushing tended to be low. This suggests that a suitable control method would be to flush newly installed risers, with the output going to waste, for 24 hours[2] prior to reconnection to the public water supply.

[1] A compound intermediate between a monomer and a polymer, normally having up to about ten monomer units.

[2] This time is based on the TOC die-away curve for flushing the riser at site F that had been stagnant for 28 days.

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1. INTRODUCTION

1.1 Background

Many water undertakers have used flexible rising mains as the preferred option to fixed piping systems for rising mains leading from borehole pumps. These flexible hoses are usually made from fabric-reinforced polyurethane. They offer several potential advantages over fixed installations, including:

- lower initial costs;
- lower installation costs and greater convenience; and
- lower costs in operations such as raising the pump from the bottom of the borehole for maintenance.

Formerly such rising mains were treated as traditional materials under the requirements of Regulation 25(1)(c) of the Water Supply (Water Quality) Regulations 1989. Water undertakers would replace existing flexible rising mains with new lengths of flexible hose as required, on a like for like basis.

Regulation 31 of the current Water Supply (Water Quality) Regulations 2000 (2001 in Wales) does not contain a comparable provision for the continued use of product on a 'traditional' basis. This has meant that water undertakers can no longer replace flexible rising mains on a like-for-like basis. Where replacement is required, they have to change to approved fixed metallic (usually stainless steel) pipe installations with the concomitant increased cost implications, together with difficulties associated with installation and pump removal.

The former Committee for Products and Processes used in Public Water Supply (CPP) received and considered formal applications for approval of flexible rising mains, following the introduction of the new regulations. GC-MS general survey test results obtained from leaching tests undertaken on these products have shown persistent high concentrations of large numbers of unknown organic compounds over the three 72 hour extraction periods of the tests.

The general objective of this project was to analyse samples of water from sites where flexible rising mains had been in use for some time to determine the quantity and nature of any leachates present. Following this initial sampling, the riser was replaced with a new one and the leachates were monitored over a period of weeks. This work was carried out in co-operation with two water undertakers.

1.2 Objectives

a) To conduct extended leaching tests to determine the die-away rates for the unknown compounds found during the previous laboratory testing, taking into account that both outer and inner surfaces of the rising main will normally be in contact with water intended for human consumption.

b) To attempt to identify persistent unknown compounds (some of which may be oligomers of the base polymer used).

c) If compounds reach acceptably low concentrations during extended extraction periods, to consider how this level of leaching could be achieved in practice, through documented commissioning requirements, and whether this could be undertaken by the manufacturer before delivery to the end user.

d) To determine whether leaching characteristics change with differing water types, e.g. from chalk and sandstone aquifers.

e) To determine whether subsequent enhancement of leaching of substances from the rising main into the borehole occurs as a result of stagnation of water during shut-down periods and to consider how any such effects could be ameliorated.

2. METHODOLOGY

2.1 Sample locations

Water companies were contacted to identify those that had flexible rising mains installed and that were willing to co-operate in the project. Two suitable sites were identified – these are referred to as sites F (chalk aquifer) and A (greensand aquifer). Each of these sites had existing 152 mm (6 inch) diameter flexible rising mains of the same type and manufacturer (Angus Fire Armour Wellmaster).

It required considerable effort and negotiation with water companies to identify suitable sites and this led to a substantial delay in progressing the project.

In addition, information on leaching from flexible reinforced polyurethane hoses was reviewed. This information was held on DWI's confidential Regulation 31 approvals files and these files were reviewed at DWI's offices. This was done to provide information to assist in the identification of unknown chemicals found by GC-MS analysis.

2.2 Sampling programme

At each of the two identified sampling sites (F and A) the following general experimental protocol was followed.

- With the existing hose in service, a sample was taken under flowing conditions after one hour's flushing (as a 'control') then a further sample was taken following 72 hour's stagnation.

- The borehole was taken off line, i.e. no longer feeding the public water supply. This was carried out by water company staff.

- The flexible riser was replaced with a new section of flexible hose, in accordance with the manufacturer's Instructions for Use document and following the water company's normal commissioning procedure. This was carried out by water company and manufacturer's staff.

- After flushing with water for one hour a control sample was taken. A stagnation period was imposed, after which a sample was taken immediately. The flushing, stagnation and sampling was repeated to give a time-series as below:

Sample No.	1	2	3	4	5	6	7
Stagnation time days	1	2	3	3	5	14	28
Total elapsed time days	1	3	6	9	14	28	56

(Sample numbers 1 to 4 were broadly equivalent, in terms of stagnation time, to the three 72 hour samples from laboratory leaching tests.)

- At site F only, following the above time series, a further 28 day stagnation period was imposed. Flow to waste was then resumed and samples of flowing water were taken immediately and after 30 minutes, 1 hour, 6 hours and 24 hours.

- On completion of testing the original rising main could be reinstated and the borehole returned to service by water company staff.

2.3 Sampling procedure

On each sampling occasion two samples were taken into 1-litre glass bottles with PTFE-lined caps for GC-MS analysis. The bottles were filled to the top leaving no headspace. (Duplicate samples were taken in case of sample bottles being broken or leakage occurring during transport to the laboratory.)

The samples were transported to WRc-NSF's Reading laboratory for analysis for Total Organic Carbon (TOC) and GC-MS General Survey.

2.4 Analysis

GC-MS analysis was conducted according to BS 6920 Part 4, which specifies extraction at pH 2. Samples for GC-MS analysis were solvent extracted within 48 hours of the time of sampling. The samples were acidified to pH 2 with sulphuric acid (10%) and extracted with dichloromethane (DCM), 2 × 100 ml. The combined DCM extracts were dried (by storing overnight in a freezer and filtering to remove ice crystals) and concentrated in a Kuderna-Danish apparatus at 50°C to approximately 2 ml, and then concentrated further to 500 µl under a stream of nitrogen. The extracts were stored in a freezer for varying lengths of time prior to analysis by GC-MS.

General survey GC-MS analysis was conducted according to BS6920 Part 4 using a Hewlett-Packard 5890 gas chromatograph (GC) directly coupled to a VG 70S mass spectrometer.

Data interpretation was undertaken by inspecting the mass spectra of all the peaks detected on the total ion current (TIC) chromatogram. If mass spectra were not recognised, libraries of mass spectra (either the NIS, NISTREP and Wiley libraries held on the GC-MS data system or a hard copy version of the Eight Peak Index) were utilised in an attempt to identify the compound giving rise to a particular mass spectrum. If this approach was unsuccessful, an attempt was made to interpret the mass spectrum from first principles. Where no identity can be suggested, compounds are listed as unknowns, together with a listing of the four most intense ions in the mass spectrum (in decreasing order of intensity).

Estimates of the concentrations of the compounds identified were made using the responses obtained for deuterated internal standards, which were added to the sample prior to analysis. Quantification was based on a comparison of the TIC chromatogram peak area of a compound of interest with the peak area of an internal standard. The internal standard used was that with the closest retention time to the peak for the compound of interest.

TOC was determined by a UV/persulphate oxidation technique with non-dispersive infra-red detection. The instrument was calibrated with a standard solution (10 mg/l as organic carbon) of potassium hydrogen phthalate (single point calibration). In addition, control standards, a solution of potassium hydrogen phthalate (5 mg/l as organic carbon), and blank water were analysed with the samples.

3. RESULTS

3.1 Site F

3.1.1 Sampling schedule

The sample schedule and associated sample codes are given in Table 3.1.

3.1.2 TOC

The TOC results are tabulated in Table 3.2. The results for TOC during the main phase of sampling are given in Figure 3.1 and Figure 3.2 shows the TOC results from the final flushing experiment.

3.1.3 GC-MS general survey

The results for GC-MS general survey are given in Table 3.3. The detailed results are in Appendix A.

Table 3.1 Sample Schedule - Site F

			Date	Elapsed days	Time	Samples		No. Samples	Spl Code
Old riser experiment	Flowing sample	Day 1	17/10/2008		10:05	60 minute flush		1	FD1
	Stagnation sample	Day 4	20/10/2008		10:15	Stagnation		1	F2
New riser experiments		Start date	02/12/2008		09:00	60 minute flush		1	F3
	Sample #	Stagn Days							
	1	1	03/12/2008	1	08:55	Stagnation	60 minute flush	2	F4/F5
	2	2	05/12/2008	3	09:00	Stagnation	60 minute flush	2	F6/F7
	3	3	08/12/2008	6	08:55	Stagnation	60 minute flush	2	F8/F9
	4	3	11/12/2008	9	08:55	Stagnation	60 minute flush	2	F10/F11
	5	5	16/12/2008	14	08:50	Stagnation	60 minute flush	2	F12/F13
	6	14	30/12/2008	28	09:15	Stagnation	60 minute flush	2	F14/F15
	7	28	27/01/2009	56	09:00	Stagnation		1	F16
	Stagnate	28	24/02/2009	84					
Resume flow and sample after following hours			24/02/2009	84	08:55	Stagnation		1	F17
	0.5		24/02/2009	84	09:25	Flowing		1	F18
	1		24/02/2009	84	09:55	Flowing		1	F19
	6		24/02/2009	84	14:55	Flowing		1	F20
	24		25/02/2009	85	08:55	Flowing		1	F21

Table 3.2 TOC results - Site F

Sample	TOC mg/l
FD1	0.44
F2	0.50
F3	0.41
F4	1.28
F5	0.83
F6	1.24
F7	0.67
F8	0.50
F9	0.57
F10	0.75
F11	0.47
F12	0.69
F13	0.87
F14	0.46
F15	0.90
F16	0.90
F17	0.72
F18	0.60
F19	0.57
F20	0.50
F21	0.37

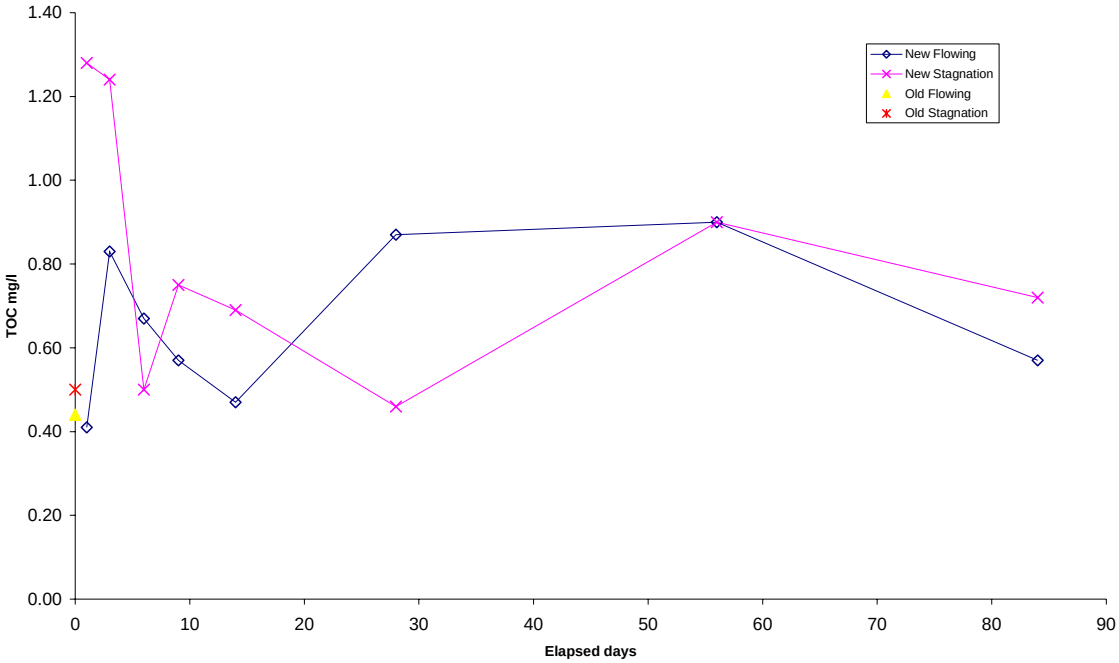


Figure 3.1 TOC data - Site F

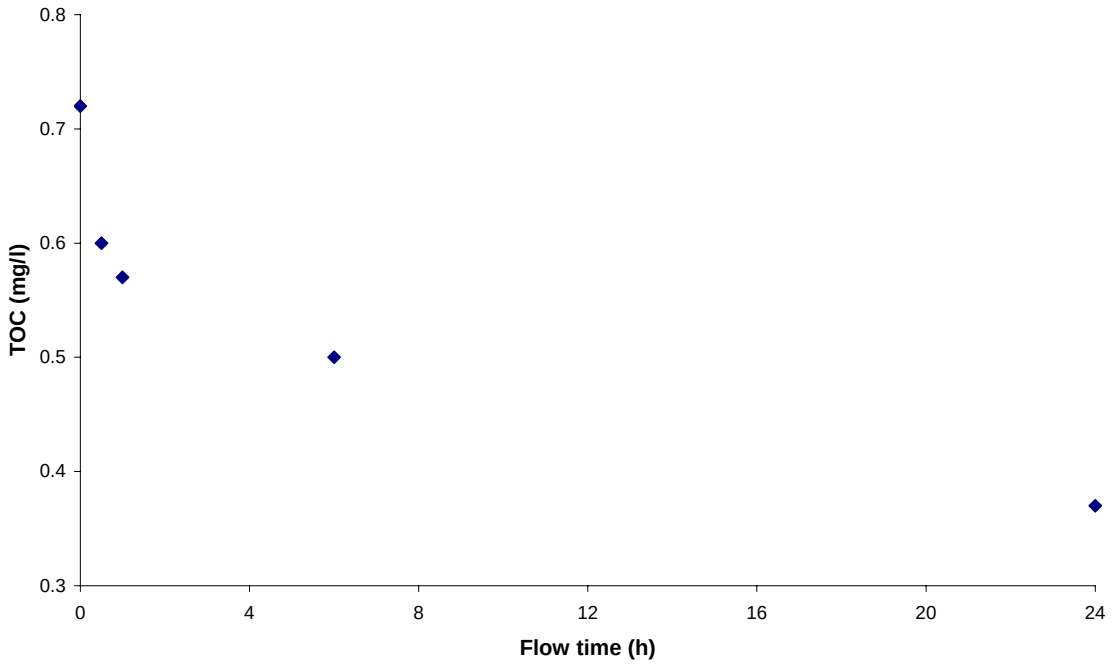


Figure 3.2 TOC results for day 84 flushing experiment - Site F

Table 3.3 GC-MS results (µg/l) - Site F[3]

Scan	Compound	FD1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21
0004	iso-Butanol				8.4		5.4															
0642	2-Ethylhexanol				0.4							0.1			0.3	0.7						
0891	2-Phenoxyethanol														0.2	0.6						
1013	Unknown m/z 101,42,54,55				0.7		0.7															
1018	Unknown m/z 55,84,112,142														0.2							
1024	Unknown m/z 55,84,112,41																0.2					
1065	Dodecamethylcyclohexasiloxane					0.2																
1081	2,4,4-Trimethylpentane-1,3-diol mono-isobutyrate					0.2																
1095	Unknown m/z 43,58,41,27															2.0						
1192	2,-Di-t-butyl-4-methylene-2,5-cyclohexadien-1-one					0.2							0.1									
1196	2,6-Di-t-butyl-2,5-cyclohexadiene-1-one				0.4		0.3				0.1				0.1							
1241	BHT			0.2	3.4	0.2	4.5	0.2	0.7	0.2	0.9	0.2	0.6	0.2	1.1	0.6	0.8	0.8	0.5	0.5	0.3	0.4
1250	1,6-Dioxacyclododecane-7,12-dione				0.3		0.3								4.1	0.6	7.4	3.2	0.1			
1268	N,N-Diethyl-3-pyridinecarboxamide		0.4																			
1320	Unknown m/z 71,55,41,43 (M^+ 216?)				2.6		2.5															

3 Note: In order to ensure the performance of the GC column used for the GC-MS runs is satisfactory, the retention gap (a section of capillary column fitted between the GC injector and the analytical GC column) is usually changed before a batch of sample extracts is run. Also, when this is done a small length of the analytical GC column is usually removed (as on-column injection is used, any non-volatile material remains on the retention gap, and may also contaminate the front end of the analytical GC column). As a consequence the scan number reported for the same compound in different extracts may be different, depending on whether the extracts were run as one batch (i.e. the retention gap and analytical column length were identical for each extract) in which case the reported scan numbers will be within a 1-3 scan range, or whether the extracts were run in different batches (i.e. the retention gap and analytical column length were slightly different for each batch). In the latter case, if there has been a significant time period between running the extracts from a survey taking several months (as in this present case), the scan numbers reported for the same compound may vary by up to 50 scans.

Table 3.3 continued

Scan	Compound	FD1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21
1409	Unknown m/z 41,55,81,43					0.2																
1441	Unknown m/z 55,42,101,41 (M^+ 229)				1.1		1.3															
1494	N-Butylbenzenesulphonamide*	1.5	31.6	1.5	1.8	2.6	10.4	1.2	10.1	0.9	5.7	1.0	4.5	0.7	7.9	1.0						
1628	Di-n-butyl phthalate															0.9						
1649	2-Phenyltridecane	0.5	0.4													0.8						
1650	Methyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate				0.3		0.3															
1742	Unknown m/z 71,42,41,55														1.0		0.5					
1778	Unknown m/z 71,42,55,43 (M^+ 288)				14.1		12.9		1.5		2.2											
1779	Unknown m/z 42,71,41,43			0.2														0.6				
1779	Unknown m/z 71,42,41,43									0.2		0.2										
1975	Unknown m/z 42,41,71,72				1.2		0.9															
2025	Unknown m/z 55,99,173,113 (M^+ 344)														2.2	1.1						
2065	Unknown m/z 55,173,99,113 (M^+ 344)																2.8					
2068	Unknown m/z 42,41,71,39											1.6										
2086	Unknown m/z 71,42,41,73															1.4						
2107	Unknown m/z 71,42,43,55 (M^+ 360)												5.6		9.7							
2108	Unknown m/z 42,71,41,72											0.8		1.3								
2123-2165	Unknown m/z 42,71,41,72									8.7												
2124	Unknown m/z 71,42,41,55 (M^+ 360)																2.8	3.6				
2126	Unknown m/z 42,41,71,27			0.6		35.1		69.1														
2126	Unknown m/z 42,71,41,43 (M^+ 360)				36.9		61.1		8.8		9.6											
2180	Unknown m/z 55,173,99,42 (M^+ 372)														16.6							
2180	Unknown m/z 55,173,99,53 (M^+ 372)															1.5						

Table 3.3 continued

Scan	Compound	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21
2217	Unknown m/z 55,91,173,41 (M^+ 372)																10.0					
2304	Unknown m/z 42,41,71,39				4.8		4.9															
2351	Unknown m/z 55,42,41,54 (M^+ 400)														6.5		4.0					
2437	Unknown m/z 42,71,41,55															1.0						
2479	Unknown m/z 42,41,71,27					0.6		1.0														
2480	Unknown m/z 42,41,71,39			1.1																		
2480	Unknown m/z 42,41,71,43									1.9		2.0										
2482	Unknown m/z 42,71,41,72 (M^+ 432)				60.7		96.0		14.9		16.1		8.2		9.6		3.8	4.7				
2504	Unknown m/z 221,250,180,132 (M^+ 340)				1.1		1.4															
2775	Unknown m/z 57,45,101,155												2.5									
2782	Unknown m/z 42,41,71,39				2.3		3.0															
2816	Unknown m/z 57,45,101,41						3.9		9.1		6.0											
3049	Unknown m/z 42,71,41,39 (M^+ 504)										11.7		5.9		4.8		1.9					
3080	Unknown m/z 42,41,71,27			0.8																		
3080	Unknown m/z 42,41,71,39					0.8				1.6												
3085	Unknown m/z 42,41,71,27 (M^+ 504)				61.1		92.0		12.4													
3297	Unknown m/z 57,45,41,101 (M^+ 504?)								1.2													
3311	Unknown m/z 57,45,41,29						1.0															

* N-Butylbenzenesulphonamide was detected in most samples from Site F but this may have been an artefact that leached from the nylon sampling hose that was installed to enable samples to be taken. This compound has been detected previously in groundwater samples taken using this type of tubing but not detected when this tubing was not used. This chemical was not detected in samples taken from site A.

3.2 Site A

3.2.1 Sampling schedule

The sample schedule and associated sample codes are given in Table 3.4.

3.2.2 TOC

The TOC results are given in Table 3.5 and are plotted in Figure 3.3.

3.2.3 GC-MS general survey

The results are tabulated in Table 3.6 and given in detail in Appendix A. The duplicate sample for A14 (labelled as A14D) was also analysed and the results are included in the table. No compounds attributable to the flexible riser were found in samples A9 and A11 (flowing samples).

Table 3.4 Sample Schedule - Site A[4]

			Date	Elapsed days	Time	Samples		No. Samples	Spl Code
Old riser experiment	Flowing sample	Day 1	03/03/2009		11:20	60 minute flush		1	A1
	Stagnation sample	Day 4	06/03/2009		09:20	Stagnation		1	A2
New riser experiments		Start date	10/03/2009			60 minute flush		1	A3
	Sample #	Stagn Days							
	1	1	11/03/2009	1	09:10	Stagnation	60 minute flush	2	A4/A5
	2	2	13/03/2009	3	08:55	Stagnation	60 minute flush	2	A6/A7
	3	3	16/03/2009	6	09:50	Stagnation	60 minute flush	2	A8/A9
	4	3	19/03/2009	9	08:50	Stagnation	60 minute flush	2	A10/A11
	5	5	24/03/2009	14	08:50	Stagnation	60 minute flush	2	A12/A13
	6	14	07/04/2009	28	08:50	Stagnation	60 minute flush	2	A14/A15
	7	28	05/05/2009	56	08:50	Stagnation		1	A16

[4] It was planned to include an extended flushing experiment on day 84, as for site F. However, when the sampler arrived on site on day 84 it was discovered that the water company had removed the sampling standpipe without notice.

Table 3.5 TOC results - Site A

Sample	TOC mg/l
A1	0.61
A2	0.71
A3	0.74
A4	0.95
A5	0.61
A6	1.03
A7	0.52
A8	0.65
A9	0.53
A10	1.44
A11	0.65
A12	1.49
A13	0.46
A14	2.51
A15	0.66
A16	0.83

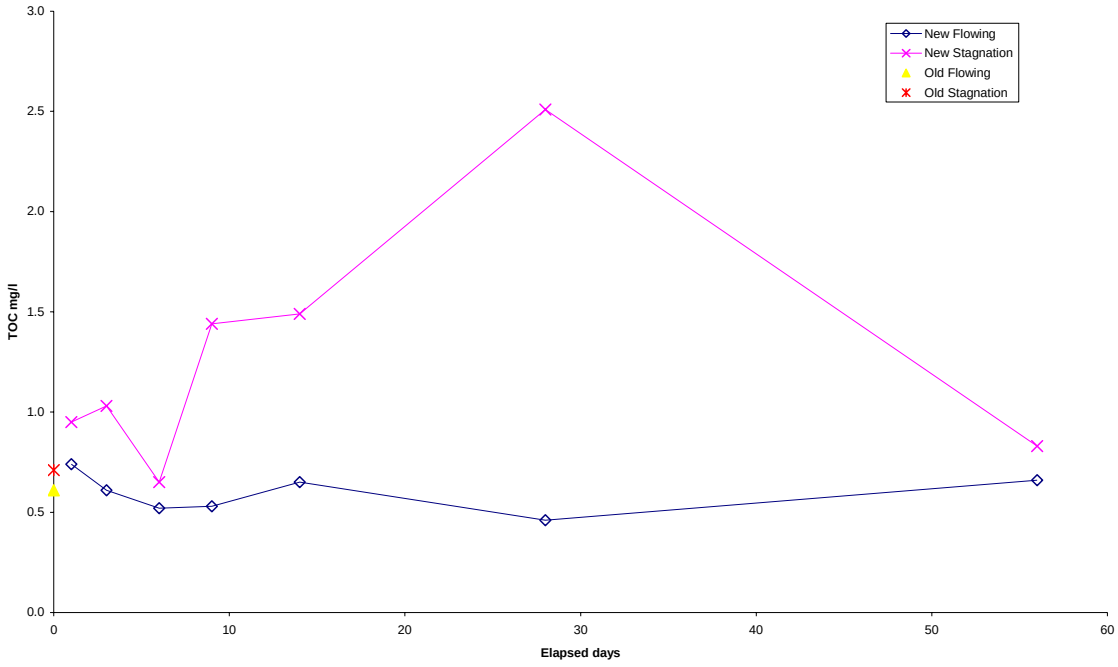


Figure 3.3 TOC data - Site A

Table 3.6 GC-MS results (µg/l) - Site A[5]

Scan	Compound	A1	A2	A3	A4	A5	A6	A7	A8	A10	A12	A13	A14	A14D	A15	A16
0004	Tetrahydrofuran												6.1			
0004	iso-Butanol												7.8			
0298	Ethyl-2-hydroxypropanoate												0.7			
0298	Ethyl lactate + butyl acetate (contaminant)													1.2		
0405	Xylene isomer												0.3			
0642	2-Ethylhexanol												0.4			
0743	2-Butoxyethylacetate												0.2			
0817	4-Butoxybutanol												0.5			
1013	Unknown m/z 101,42,54,55										1.3		4.2			0.3
1021	Unknown m/z 101,42,54,27						3.3									
1023	Unknown m/z 101,42,54,55									2.2				9.0		
1095	Unknown m/z 43,58,41,27		1.3													
1204	Unknown m/z 42,41,55,71												0.2			
1206	4-Methylene-2,6-di-t-butyl-2,5-cyclohexadien-1-one						0.2									
1226	Unknown m/z 45,58,115,55						0.2									

5 Note: In order to ensure the performance of the GC column used for the GC-MS runs is satisfactory, the retention gap (a section of capillary column fitted between the GC injector and the analytical GC column) is usually changed before a batch of sample extracts is run. Also, when this is done a small length of the analytical GC column is usually removed (as on-column injection is used, any non-volatile material remains on the retention gap, and may also contaminate the front end of the analytical GC column). As a consequence the scan number reported for the same compound in different extracts may be different, depending on whether the extracts were run as one batch (i.e. the retention gap and analytical column length were identical for each extract) in which case the reported scan numbers will be within a 1-3 scan range, or whether the extracts were run in different batches (i.e. the retention gap and analytical column length were slightly different for each batch). In the latter case, if there has been a significant time period between running the extracts from a survey taking several months (as in this present case), the scan numbers reported for the same compound may vary by up to 50 scans.

Table 3.6 continued

Scan	Compound	A1	A2	A3	A4	A5	A6	A7	A8	A10	A12	A13	A14	A14 D	A15	A16
1240	2,6-Di-t-butyl-4-hydroxy-4-methyl-2,5-cyclohexadien-1-one												0.3			
1241	BHT			0.3	0.3	0.2	2.6	0.2	0.2	2.0	6.3	0.2	6.4	6.8		0.7
1250	1,6-Dioxacyclododecane-7,12-dione				0.6		2.0			1.8	1.9		4.3	6.8		0.2
1257	Unknown m/z 45,58,54,55													0.7		
1257	Unknown m/z 45,115,58,55												0.3			
1308	Diethyl phthalate	0.2	0.2													0.1
1327	Unknown m/z 71,55,41,43 + d_{34}-Hexadexane (internal standard)										3.4		4.2	4.2		
1375	Unknown m/z 71,43,41,57												0.3			0.1
1440	Unknown m/z 55,101,42,41									0.3	1.0		1.1	1.1		
1628	Di-n-butyl phthalate													0.2		
1650	Methyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate										0.3			0.4		
1710	Sulphur (S_8)								0.3							
1742	Unknown m/z 71,42,41,55								1.5							
1752	Unknown m/z 71,42,55,41 (M^+288)										88.7		70.1			8.0
1754	Unknown m/z 71,42,41,55 (M^+288)									122.4						
1754	Unknown m/z 42,71,41,43 (M^+ 288)						11.6									
1755	Unknown m/z 42,71,41,43				3.2											
1810	Unknown m/z 71,73,55,42 (M^+ 288)													58.7		
1945	Unknown m/z 42,41,71,43										5.8		4.1			
1975	Unknown m/z 42,41,71,72				33.2	22.0*						92.9*				
1993	Unknown m/z 42,41,71,72 (M^+ 576)							68.8*								
2001	Unknown m/z 42,71,73,41													3.2		
2065	Unknown m/z 55,173,99,113 (M^+ 344)													1.4		

Table 3.6 continued

Scan	Compound	A1	A2	A3	A4	A5	A6	A7	A8	A10	A12	A13	A14	A14 D	A15	A16
2094	Unknown m/z 42,71,41,55 (M^+ 360)									236.2						
2094	Unknown m/z 71,42,41,55 (M^+ 360)										175.8					
2094	Unknown m/z 42,41,71,39 (M^+ 360)						153.9									
2095	Unknown m/z 42,41,71,39								3.3							
2135	Di-(2-ethylhexyl) phthalate															2.9
2151	Unknown m/z 71,42,73,55 (M^+ 360)															14.7
2153	Unknown m/z 71,55,73,42 (M^+ 360)												127.9	113.6		
2250	Unknown m/z 55,41,42,173 (M^+ 372)													1.7		
2272	Unknown m/z 42,41,71,72						10.1									
2273	Unknown m/z 42,41,71,73										12.9					
2339	Unknown m/z 42,73,71,55													8.4		
2340	Unknown m/z 42,73,71,41												6.2			
2433	Unknown m/z 55,42,41,71 (M^+ 400)													1.4		
2436	Unknown m/z 42,71,41,72 (M^+ 576)														122.8 *	
2443	Unknown m/z 42,41,71,72				67.8		278.1		4.7							
2445	Unknown m/z 42,41,71,72 (M^+ 432)									345.6	294.2					
2528	Unknown m/z 71,42,41,55 (M^+ 432)															21.1
2534	Unknown m/z 42,71,41,55 (M^+ 432)													218.5		
2535	Unknown m/z 71,42,55,73 (M^+ 432)												227.9			
2560	Unknown m/z 250,221,180,132													1.3		
2736	Unknown m/z 42,41,71,72						7.7									
2774	Unknown m/z 113,69,41,39				2.4											
2866	Unknown m/z 42,73,71,41													4.1		

Table 3.6 continued

Scan	Compound	A1	A2	A3	A4	A5	A6	A7	A8	A10	A12	A13	A14	A14 D	A15	A16
3022	Unknown m/z 42,41,71,72				56.7											
3026	Unknown m/z 42,71,41,72 (M^+ 504)						240.9			237.4						14.5
3031	Unknown m/z 42,41,71,39 (M^+ 504)										215.6					
3208	Unknown m/z 71,42,55,73 (M^+504)												193.3			
3208	Unknown m/z 42,41,71,72 (M^+ 504)													203.9		

* Probably carry-over from the previous sample. Normally oligomers elute on GC-MS in order of increasing molecular weight, so when an oligomer with the highest molecular weight elutes before one of lower molecular weight it is highly likely that this is due to carry-over.

3.3 Identification of unknowns

A series of unknowns with molecular weights in multiples of 72 (i.e. m/z 288, 360, 432 and 504) was found in many of the stagnation samples. An example chromatogram is given in Figure 3.4 and representative mass spectra are given in Figure 3.5 to Figure 3.8. Plots of the concentrations of these compounds are shown in Figure 3.9 and Figure 3.10.

Prior to carrying out the GC-MS analysis of extracts from the water samples taken at the selected sampling sites, previous analytical results obtained by two other Regulation 31 designated test laboratories when flexible rising mains were considered for approval, were inspected.

Two reports by laboratory M provide analytical results relating to two different test samples. The first relates to a hose, diameter 51 mm, whereas the second relates to a riser with a diameter of 152 mm. Both samples were submitted for approval by the same manufacturer and both products are described as the same trade name. However, from an examination of the GC-MS data contained in the two reports it appears that the two reports relate to different materials – the migration waters from the 51 mm diameter hose contain many significant unidentified compounds that have mass spectra in which the base peak is at m/z 59, while the migration waters from the 152 mm diameter riser contain significant compounds (again unidentified) whose mass spectra have a base peak at m/z 71. The total ion current (TIC) chromatograms also differ significantly.

Four reports from laboratory L relate to a flexible rising main from a different manufacturer, nominal internal diameter 38 mm. The compounds present at the highest concentrations in the migration waters were not identified in the initial report but the base peaks in their mass spectra were at m/z 71, and from the mass spectra provided in the appendix to this report it appears that these compounds were the same as those detected by laboratory M in the 152 mm diameter riser. One of the later reports from laboratory L suggests that the unknown compounds detected at the highest concentrations in the migration waters could be a series of oligomers of poly(tetrahydrofuran) (polyTHF), also referred to as poly(tetramethyleneglycol) (PTMEG). Butane-1,4-diol and PTMEG may be used in the production of polyurethanes.

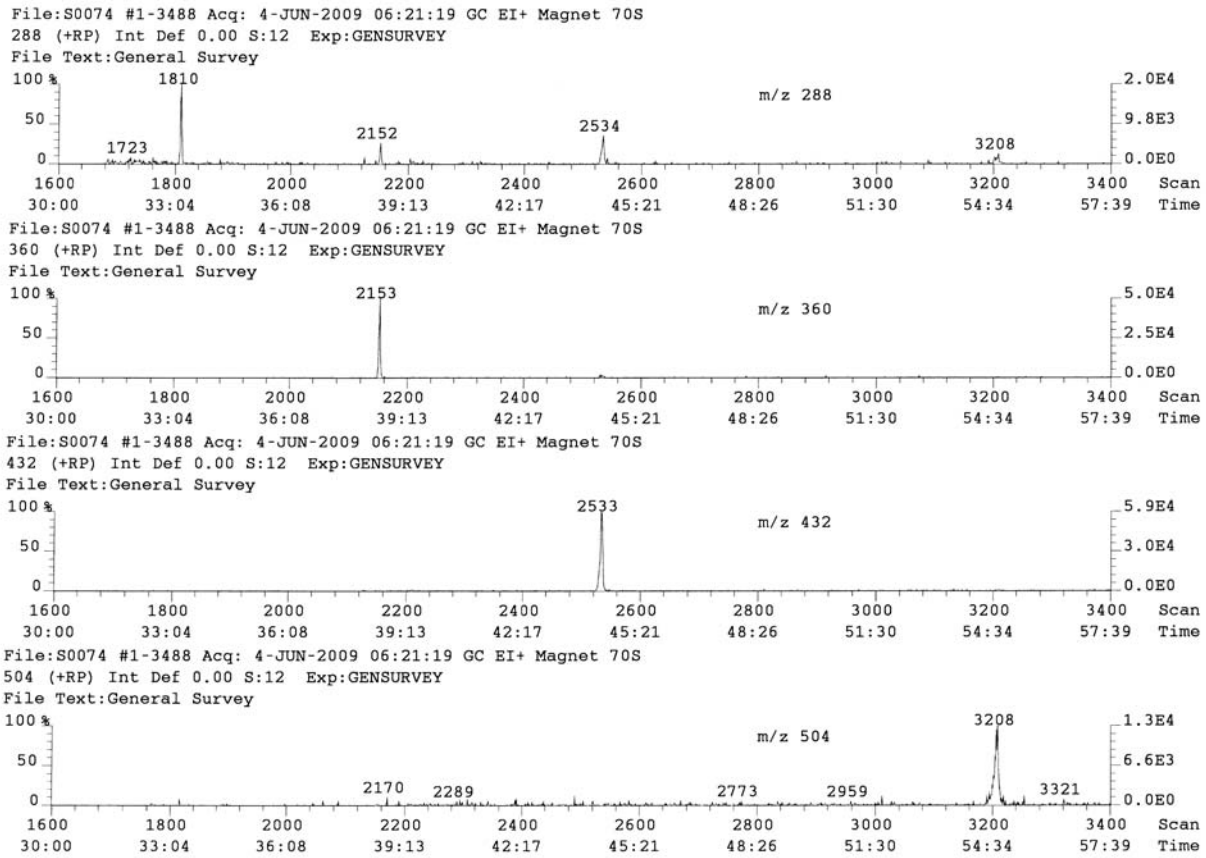


Figure 3.4 Mass chromatograms of unknowns

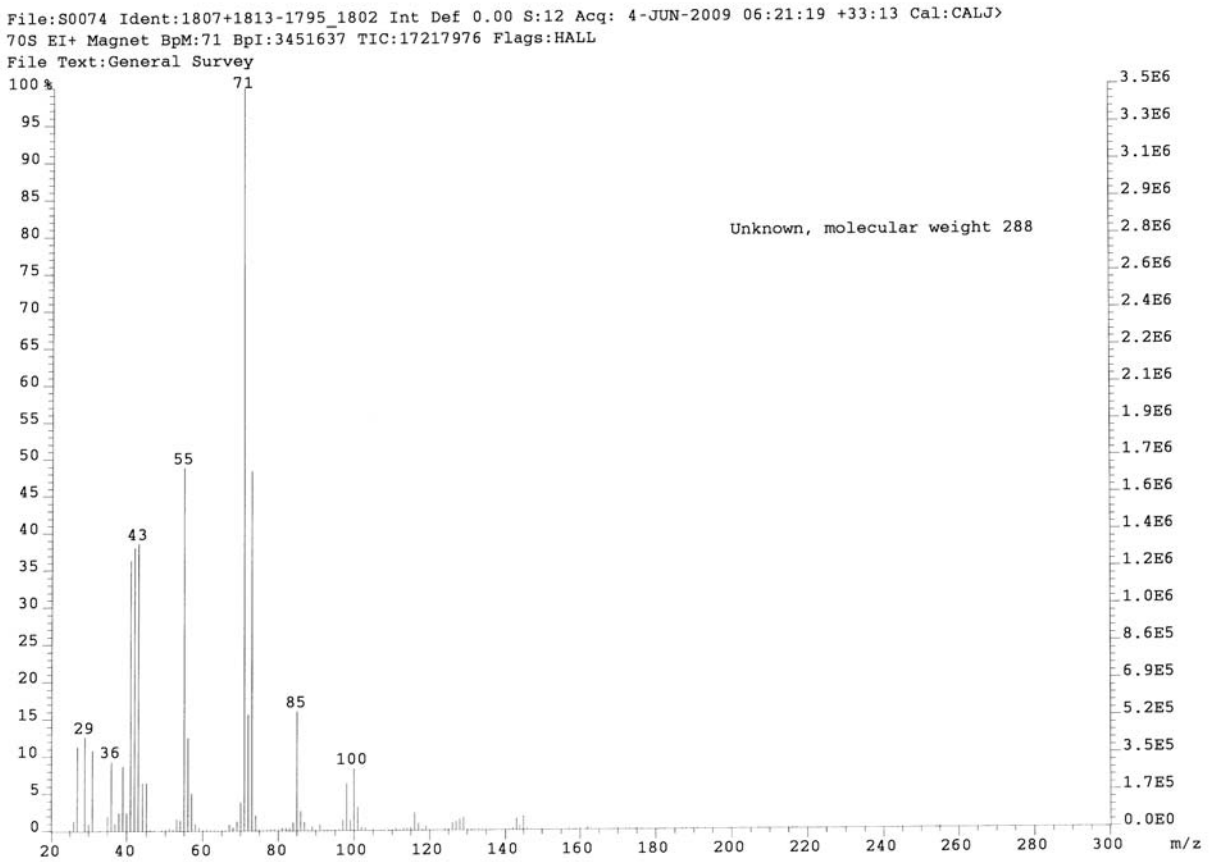


Figure 3.5 Mass spectrum of unknown m/z 288

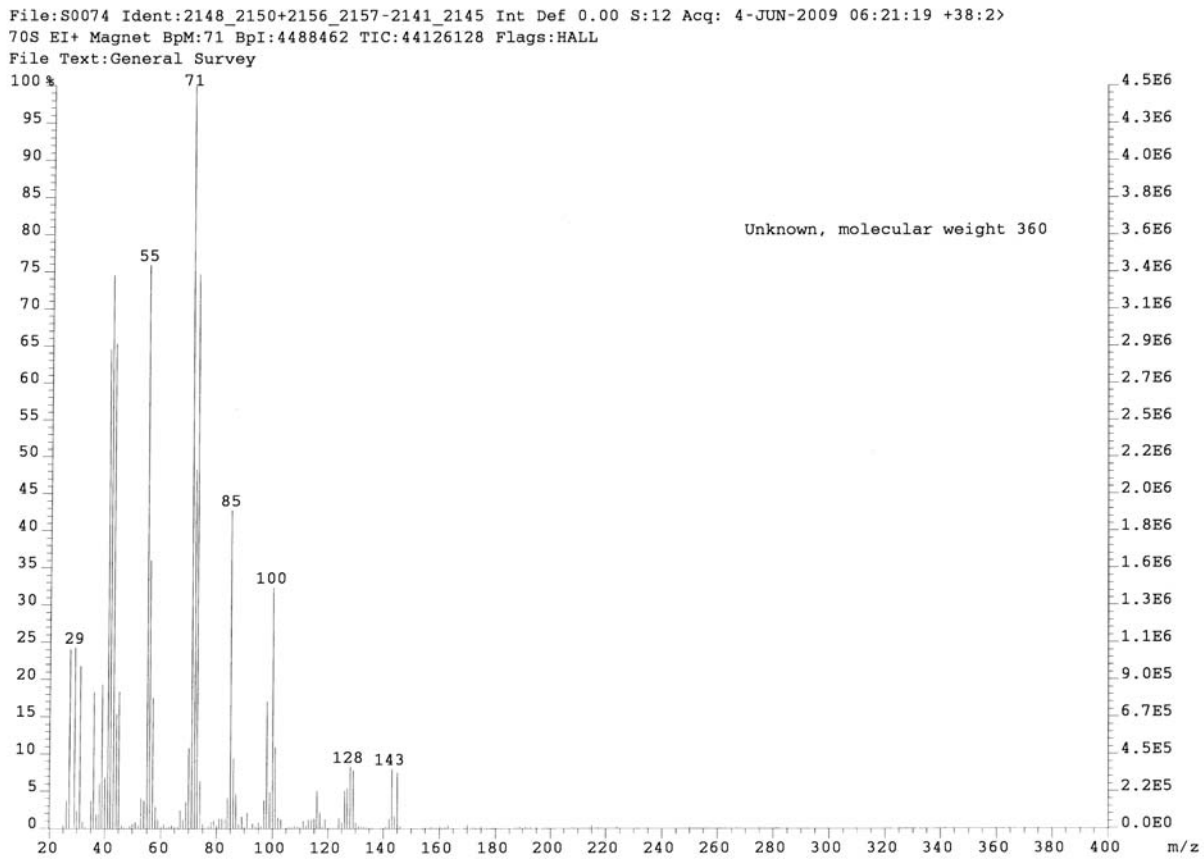


Figure 3.6 Mass spectrum of unknown m/z 360

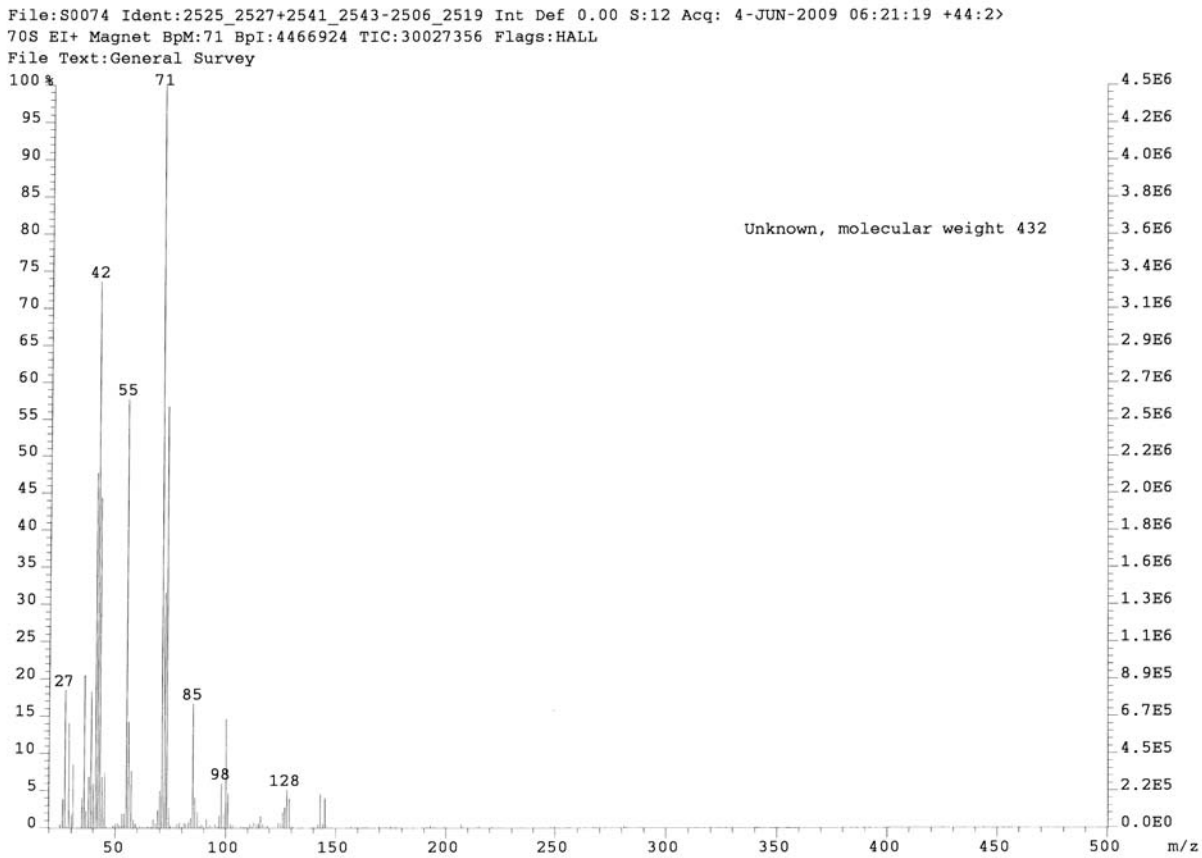


Figure 3.7 Mass spectrum of unknown m/z 432

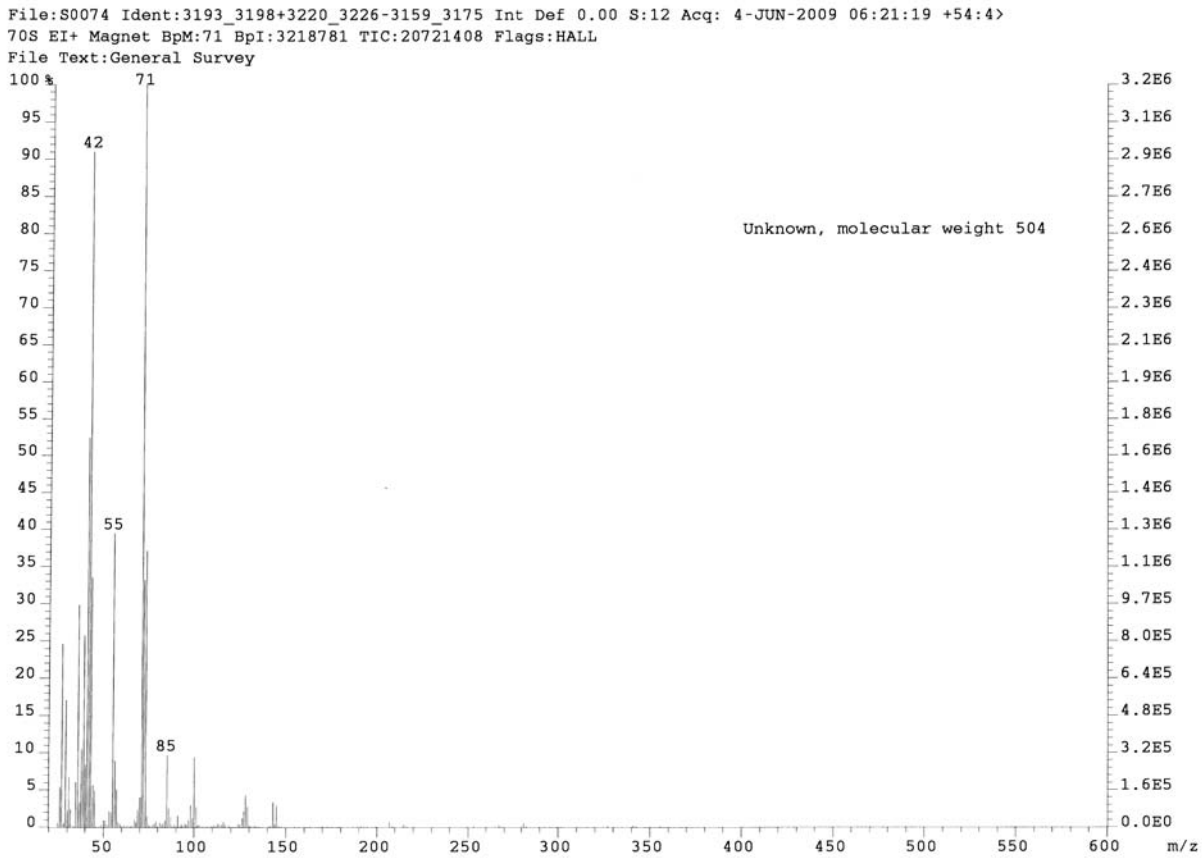


Figure 3.8 Mass spectrum of unknown m/z 504

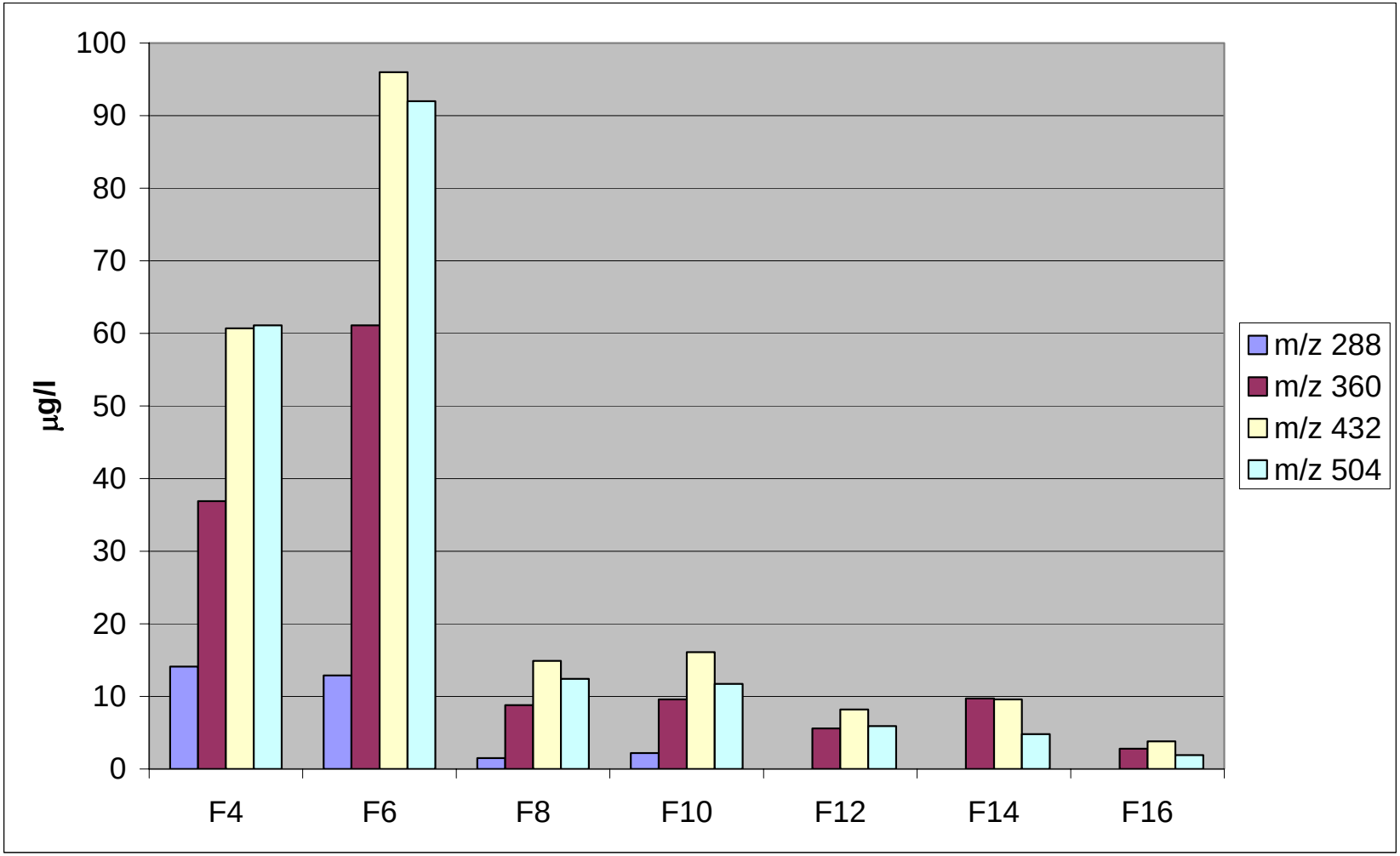


Figure 3.9 Unknowns in samples from Site F

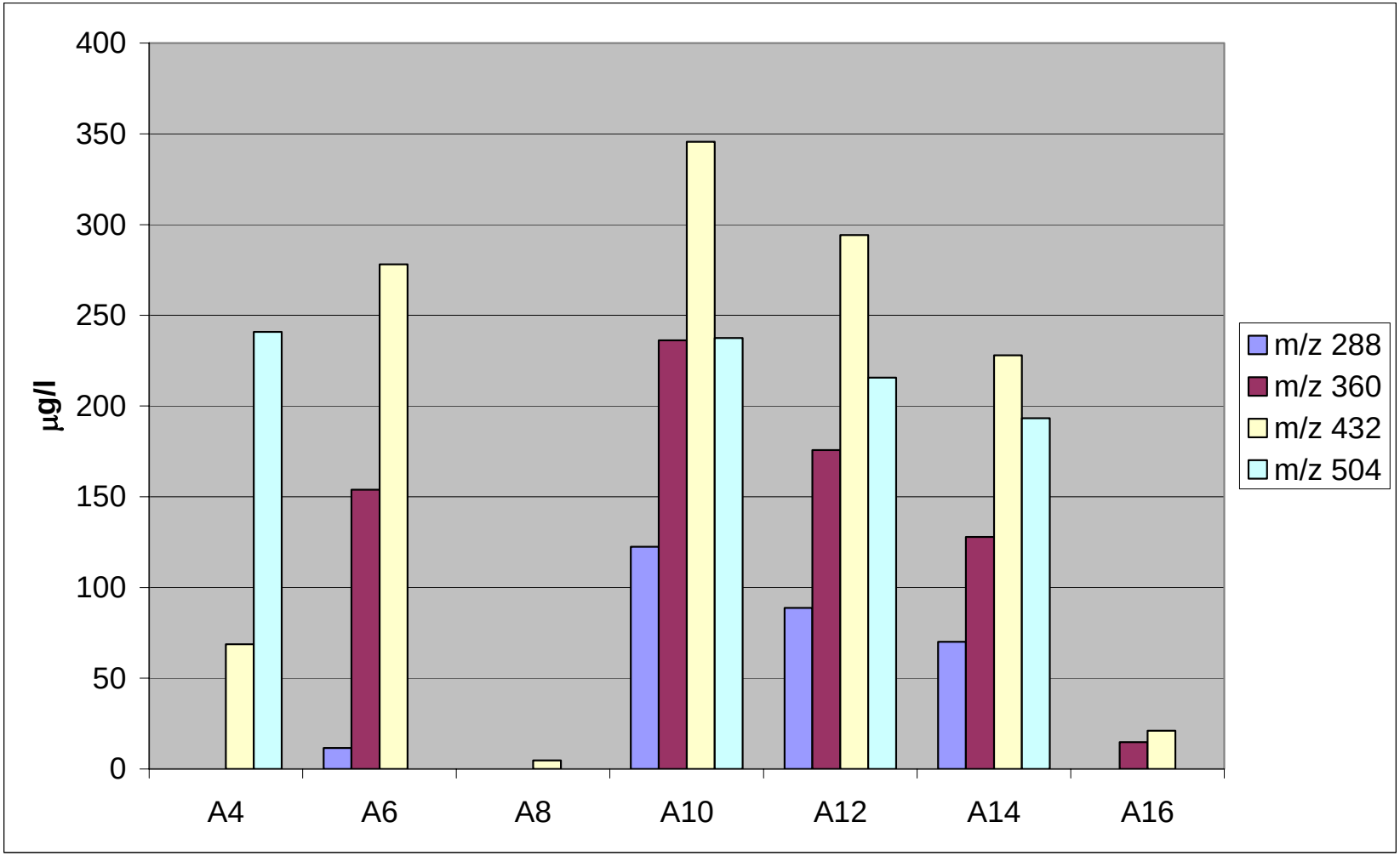


Figure 3.10 Unknowns in samples from Site A

As noted above, the major peaks detected in the migration waters during the course of this present work appear to be the same as those previously reported by Laboratory M (from the 152 mm diameter riser) and by laboratory L (from the 38 mm flexible rising main), as their mass spectra, while not identical, are very similar and the relative retention times of the major compounds detected in the TIC traces reported by laboratories M and L and in this current work are obviously similar. This conclusion is also supported by the fact that the mass spectral peaks identified in this present study as being the molecular ions for a series of oligomers differing in molecular weights by 72 mass units (the main compounds having molecular weights of 288, 360, 432, 504 and 576) can also be seen in the mass spectra provided by laboratories M and L (although they were not recognised as being the relevant molecular ions at the time). For example, the laboratory M report shows a mass spectrum where the highest observed mass is at m/z 360, and another in which the highest observed mass was at m/z 432. An Appendix to one of the laboratory L reports shows similar mass spectra in which the highest observed masses are at m/z 360 and 432 respectively. In this present report the comparable spectra are shown in Figure 3.6 and Figure 3.7. During the course of this present work, one extract (F14) was re-run on GC-MS at a reduced electron ionisation voltage (30 eV, rather than the usual 70 eV), which produces less energetic ions and consequently tends to increase the relative intensities of molecular ions (as they are less energetic (i.e. more stable) this tends to reduce fragmentation). This approach confirmed that the molecular weights were as suggested, i.e. at m/z 288, 360, 432, 504 and 576. These correspond to the cyclic oligomers of PTMEG – $-(-CH_2.CH_2.CH_2.CH_2.O-)_n$, where n = 4 to 8. Such cyclic oligomers have previously been recognised as constituents of thermoplastic polyurethanes and the lower molecular weight oligomers are water soluble.

Given all of the above evidence, the identities of the unknowns detected by laboratories M and L and WRc-NSF in the highest concentrations in migration waters from materials used as rising mains are considered to be as follows:

1,6,11,16-Tetraoxacycloeicosane	$C_{16}H_{32}O_4$	M.Wt. 288
1,6,11,16,21- Pentaoxacyclopentacosane	$C_{20}H_{40}O_5$	M.Wt. 360
1,6,11,16,21,26-Hexaoxacyclotriacontane	$C_{24}H_{48}O_6$	M.Wt. 432
1,6,11,16,21,26,31-Heptaoxacyclopentatriacontane	$C_{28}H_{56}O_7$	M.Wt. 504
1,6,11,16,21,26,31,36-Octaoxacyclotetracontane	$C_{32}H_{64}O_8$	M.Wt. 576

Final proof of these proposed identities could be obtained by running pure standards on GC-MS and confirming that their GC retention times and mass spectra were identical to the compounds detected in the various migration waters. However no commercial source of pure standards has been found.

4. DISCUSSION

At both sites, only low levels of leaching were observed from the original liners that had been in use for many years. After the introduction of new liners, large numbers of unknowns were detected in the stagnation samples. These compounds tended to be present at lower concentrations or were undetectable in samples taken after flushing for 60 minutes.

The major unknowns were identified as a series of oligomers differing in molecular weight by 72 mass units, the main compounds having molecular weights of 288, 360, 432, 504 and 576. Examination of mass spectra provided in earlier test reports on leaching from similar materials from laboratories L and M showed that these same compounds were present. These compounds are likely to be oligomeric cyclic ethers although their identities cannot be confirmed conclusively due to a lack of pure standards. However, a reasonably high degree of confidence can be attached to this identification since the same series of cyclic ethers (although wrongly named after the first one) are included in NSF Standard 61 (NSF 2007, NSF 2007a). The presence of oligomeric cyclic ethers in polyurethanes has been reported (e.g. US Patent 4638097).

Based upon the TOC results there did not appear to be a difference in leaching characteristics between chalk- and greensand-derived waters. There were differences in the concentrations of chemicals detected by GC-MS but it is not known whether these differences were attributable to differences in water quality or to differences between batches of flexible hose.

Chemicals were still detected in stagnation samples several weeks after the new liners were installed. This suggests that it would not be practical or effective for the manufacturer to rinse the risers as part of the manufacturing process.

Concentrations of leached chemicals in samples taken after flushing tended to be low. At site F when samples were taken after flushing for up to 24 hours, practically no leaching was observed after 24 hours flushing. This suggests that a suitable control method would be to flush newly installed risers, with the output going to waste, for 24 hours prior to reconnection to the public water supply.

5. CONCLUSIONS

1. Negligible leaching of chemicals occurred from old risers that had been in use for five years or longer.

2. GC-MS analysis of stagnation samples from new flexible risers installed at both sites showed the presence of a number of unknowns (that were subsequently tentatively identified) at relatively high concentrations.

3. These chemicals were absent or present at lower concentrations in flushed samples.

4. The chemicals were still detected in stagnation samples several weeks after the liners were installed.

5. The major unknowns were identified as a series of oligomers differing in molecular weight by 72 mass units, the main compounds having molecular weights of 288, 360, 432, 504 and 576.

6. These compounds are likely to be oligomeric cyclic ethers although their identities cannot be conclusively confirmed due to a lack of pure standards.

7. Conclusions 4 and 5 are supported by examination of earlier test reports from two other test laboratories.

8. There did not appear to be an overall difference in the leaching characteristics at the two sites.

9. It would not be practical or effective for the manufacturer to rinse the risers as part of the manufacturing process.

10. Flushing to waste before reconnection to a public water supply could be a suitable means for water undertakers to ensure low concentrations of leached chemicals entering supply.

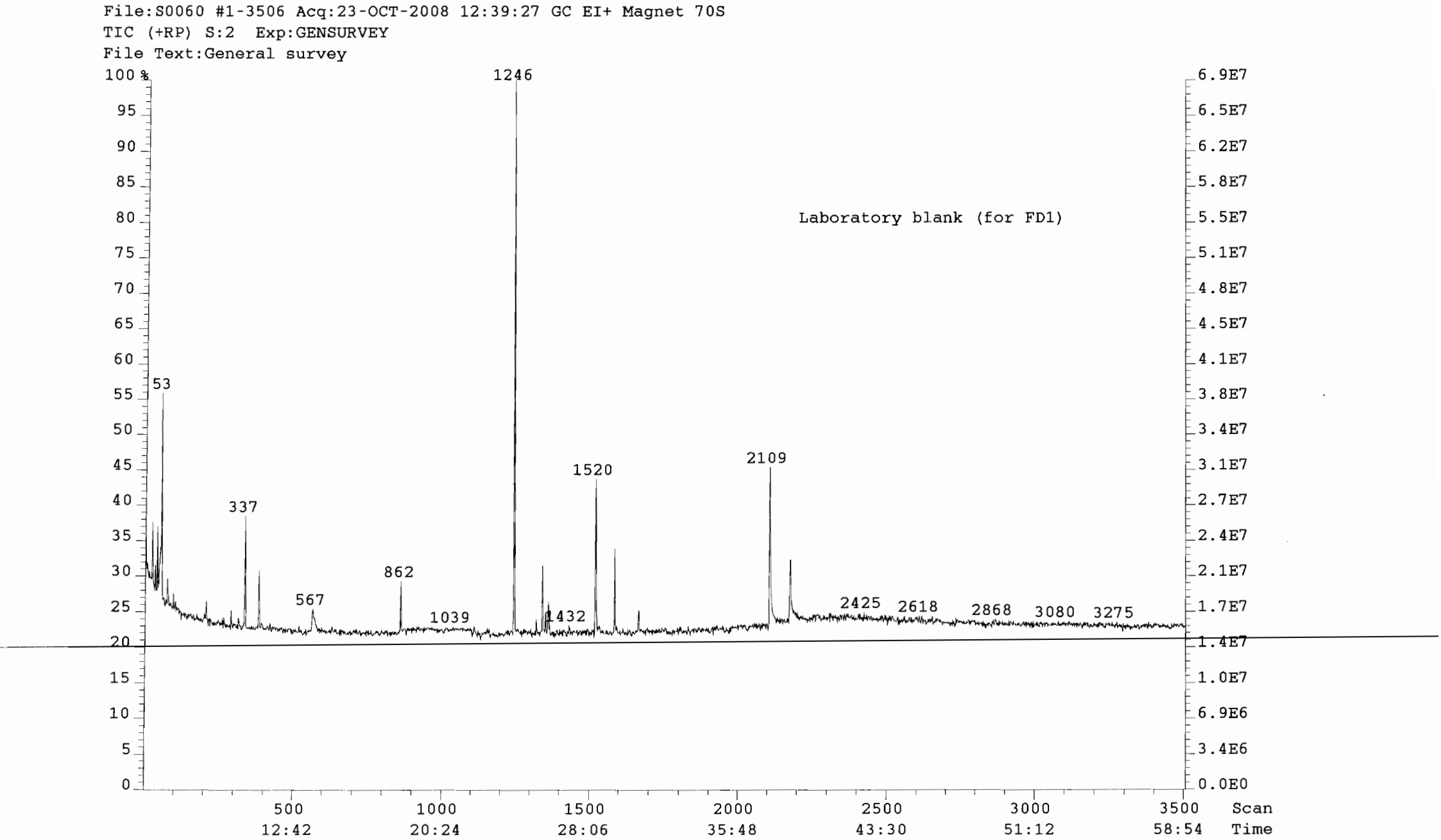
REFERENCES

NSF International (2007) NSF/ANSI Standard 61. Revisions to Standard 61 Section 3. http://standards.nsf.org/apps/group_public/download.php/220/Table%203.1%20Revisions.pdf

NSF (2007a) NSF/ANSI 61-2007a. Drinking water system components. Health effects. Table D2.

US Patent 4638097 Reducing the content of cyclic oligomeric ethers in polytetramethylene ether glycols or polyoxybutylene polyoxyalkylene glycols.

APPENDIX A DETAILED GC-MS RESULTS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1432
1520
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2425
2618
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100 %
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank 1	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	17-Oct-08
Client Reference:	Samples Received 17/10/08	**Data System Code:**	S0060.2	**Date Analysed:**	23-Oct-08
WRc-NSF Reference:	N22648	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0022	2-Methyl-1,3-dioxolane	T	1.05	2.0	Bz	Contaminant
0032	Methyl isopropyl ketone	T	0.53	1.0	Bz	Contaminant
0039	d_6-Benzene	P	1.04	2.0	I.S.	Internal Standard
0048	Carbon tetrachloride	P	0.17	0.3	Bz	Contaminant
0053	Cyclohexane	P	6.08	11.7	Bz	Contaminant
0075	3-Penten-2-ol	T	0.64	1.2	Bz	Contaminant
0096	1,4-Dioxane	T	0.27	0.5	Bz	Contaminant
0207	Toluene	P	0.43	0.4	Cl	Contaminant
0290	Butyl acetate	P	0.50	0.5	Cl	Contaminant
0315	Diacetone alcohol	P	0.37	0.4	Cl	Contaminant
0337	d_5-Chlorobenzene	P	2.07	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	1.25	1.0	I.S.	Internal Standard
0567	d_5-Phenol	P	2.12	8.0	I.S.	Internal Standard
0862	d_8-Naphthalene	P	1.45	1.0	I.S.	Internal Standard
1246	d_{20}-BHT	P	12.59	8.0	I.S.	Internal Standard
1321	Diethyl phthalate	P	0.36	0.2	BHT	Contaminant
1342	d_{34}-Hexadecane	P	1.49	1.0	I.S.	Internal Standard
1352	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.49	0.3	BHT	Contaminant
1362	Unknown 173, 55, 99, 84	U	0.76	0.5	BHT	Contaminant
1520	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.83	2.0	I.S.	Int. Std. + Contaminant
1532	Tris-(chloropropyl)phosphate isomer	T	0.22	0.1	BHT	Contaminant
1586	Di-isobutyl phthalate	P	2.48	1.6	BHT	Contaminant
1666	Di-n-butyl phthalate	P	0.77	0.5	BHT	Contaminant
2109	Di-(2-ethylhexyl) phthalate	P	6.95	14.0	Sq	Contaminant
2178	d_{62}-Squalane	P	3.97	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

Tests marked $: Not included in the WRc-NSF UKAS Accreditation Schedule.

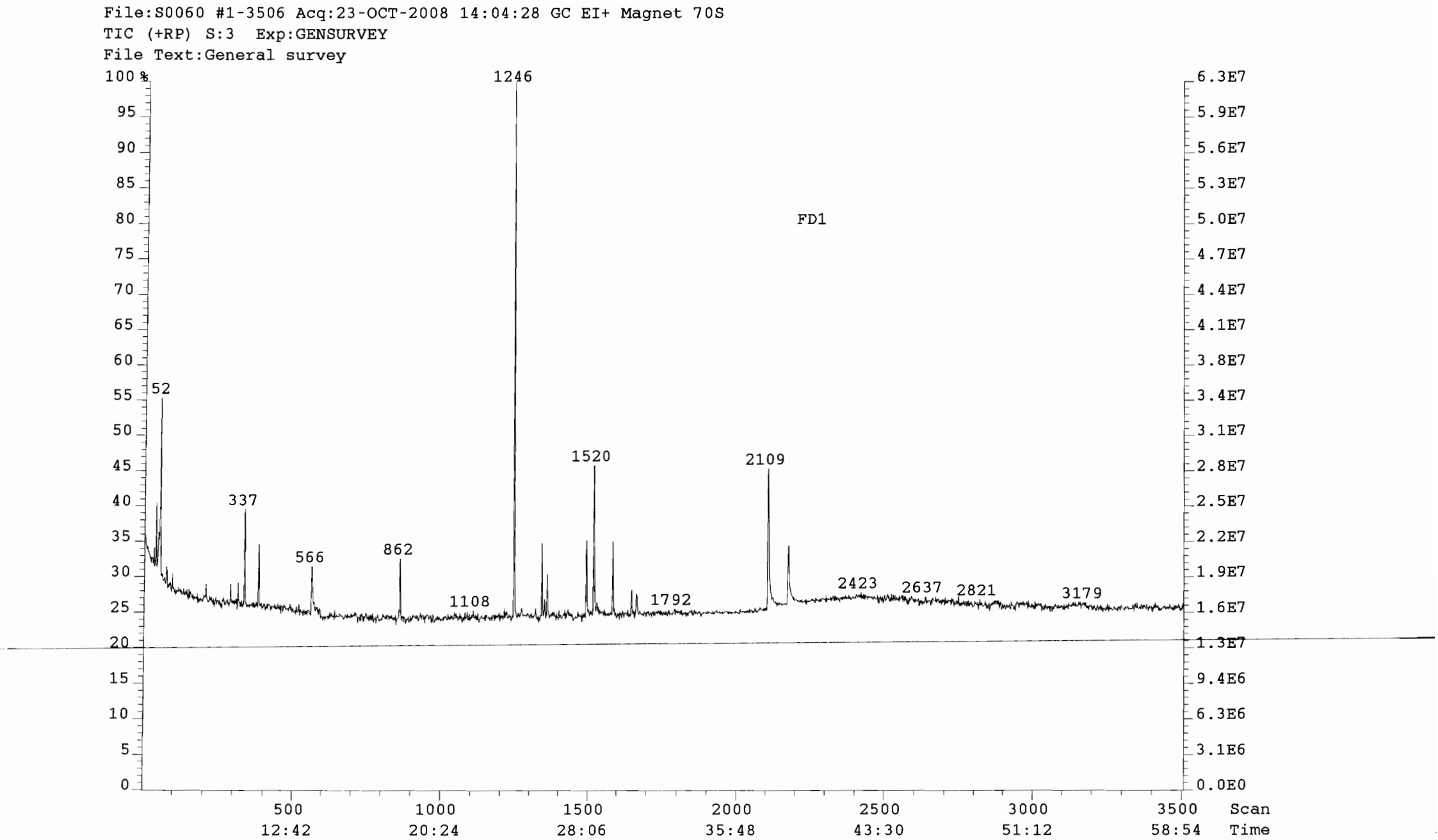
Tests marked @: Tests not performed by WRc-NSF, approved subcontractor is not UKAS accredited for this test.

Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 6/11/08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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	FD1(B)	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	17-Oct-08
Client Reference:	Samples Received 17/10/08	**Data System Code:**	S0060.3	**Date Analysed:**	23-Oct-08
WRc-NSF Reference:	N22648	**Associated Blank:**	S0060.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0031	Methyl isopropyl ketone	T	0.24	0.5	Bz	Contaminant
0038	d_6-Benzene	P	0.93	2.0	I.S.	Internal Standard
0047	Carbon tetrachloride	P	0.22	0.5	Bz	Contaminant
0052	Cyclohexane	P	5.03	10.8	Bz	Contaminant
0074	3-Penten-2-ol	T	0.49	1.1	Bz	Contaminant
0207	Toluene	P	0.50	0.5	Cl	Contaminant
0290	Butyl acetate	P	0.29	0.3	Cl	Contaminant
0314	Diacetone alcohol	P	0.75	0.8	Cl	Contaminant
0337	d_5-Chlorobenzene	P	1.92	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	1.04	1.0	I.S.	Internal Standard
0566	d_5-Phenol	P	2.74	8.0	I.S.	Internal Standard
0862	d_8-Naphthalene	P	1.54	1.0	I.S.	Internal Standard
1246	d_{20}-BHT	P	11.63	8.0	I.S.	Internal Standard
1321	Diethyl phthalate	P	0.20	0.1	BHT	Contaminant
1342	d_{34}-Hexadecane	P	1.43	1.0	I.S.	Internal Standard
1351	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.50	0.3	BHT	Contaminant
1360	Unknown 173, 55, 99, 84	U	1.14	0.8	BHT	Contaminant
1494	N-Butylbenzenesulphonamide	P	2.16	1.5	BHT	Sample
1520	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.92	2.0	I.S.	Int. Std. + Contaminant
1530	Tris-(chloropropyl)phosphate isomer	T	0.53	0.4	BHT	Contaminant
1585	Di-isobutyl phthalate	P	2.11	1.5	BHT	Contaminant
1649	2-Phenyltridecane	T	0.68	0.5	BHT	Sample
1665	Di-n-butyl phthalate	P	0.67	0.5	BHT	Contaminant
2109	Di-(2-ethylhexyl) phthalate	P	6.57	17.5	Sq	Contaminant
2178	d_{62}-Squalane	P	3.01	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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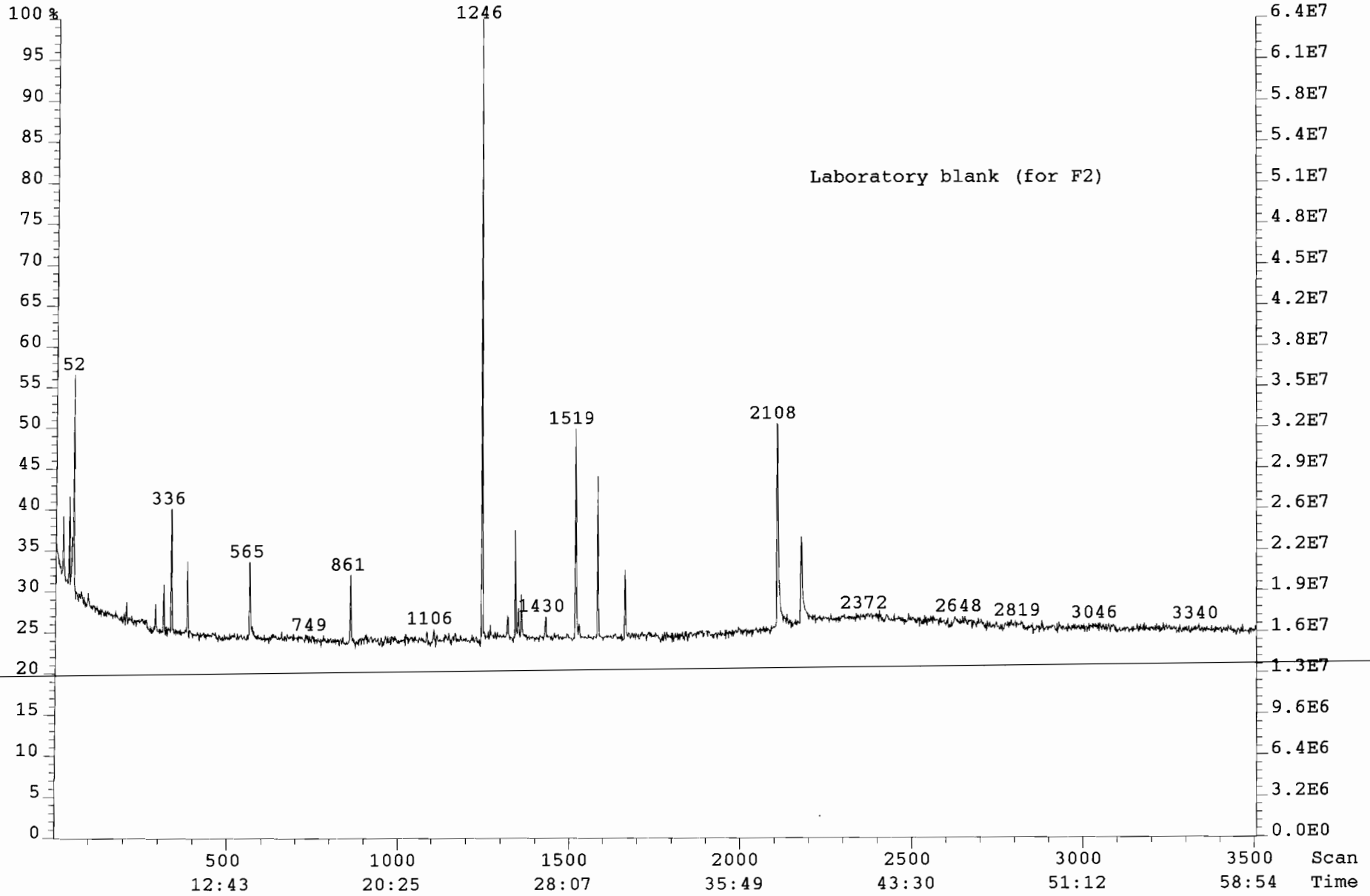
Reported By: H.A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 6/11/08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52
336
565
749
861
1106
1430
1519
2108
2372
2648
2819
3046
3340
Scan
Time
12:43
20:25
28:07
35:49
43:30
51:12
58:54

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank 2	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	17-Oct-08
Client Reference:	Samples Received 17/10/08	**Data System Code:**	S0060.4	**Date Analysed:**	23-Oct-08
WRc-NSF Reference:	N22649	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0021	2-Methyl-1,3-dioxolane	T	1.21	2.4	Bz	Contaminant
0038	d_6-Benzene	P	1.01	2.0	I.S.	Internal Standard
0047	Carbon tetrachloride	P	0.22	0.4	Bz	Contaminant
0052	Cyclohexane	P	5.53	11.0	Bz	Contaminant
0207	Toluene	P	0.54	0.5	Cl	Contaminant
0290	Butyl acetate	P	0.44	0.4	Cl	Contaminant
0314	Diacetone alcohol	P	0.90	0.8	Cl	Contaminant
0336	d_5-Chlorobenzene	P	2.29	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	1.20	1.0	I.S.	Internal Standard
0565	d_5-Phenol	P	2.54	8.0	I.S.	Internal Standard
0861	d_8-Naphthalene	P	1.52	1.0	I.S.	Internal Standard
1246	d_{20}-BHT	P	13.28	8.0	I.S.	Internal Standard
1319	Diethyl phthalate	P	0.46	0.3	BHT	Contaminant
1342	d_{34}-Hexadecane	P	1.86	1.0	I.S.	Internal Standard
1351	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.54	0.3	BHT	Contaminant
1360	Unknown 173, 55, 99, 84	U	0.89	0.5	BHT	Contaminant
1430	Unknown 41, 55, 81, 96	U	0.39	0.2	BHT	Contaminant
1519	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.67	2.0	I.S.	Int. Std. + Contaminant
1529	Tris-(chloropropyl)phosphate isomer	T	0.24	0.1	BHT	Contaminant
1585	Di-isobutyl phthalate	P	3.05	1.8	BHT	Contaminant
1665	Di-n-butyl phthalate	P	1.59	1.0	BHT	Contaminant
2108	Di-(2-ethylhexyl) phthalate	P	8.64	14.0	Sq	Contaminant
2178	d_{62}-Squalane	P	4.93	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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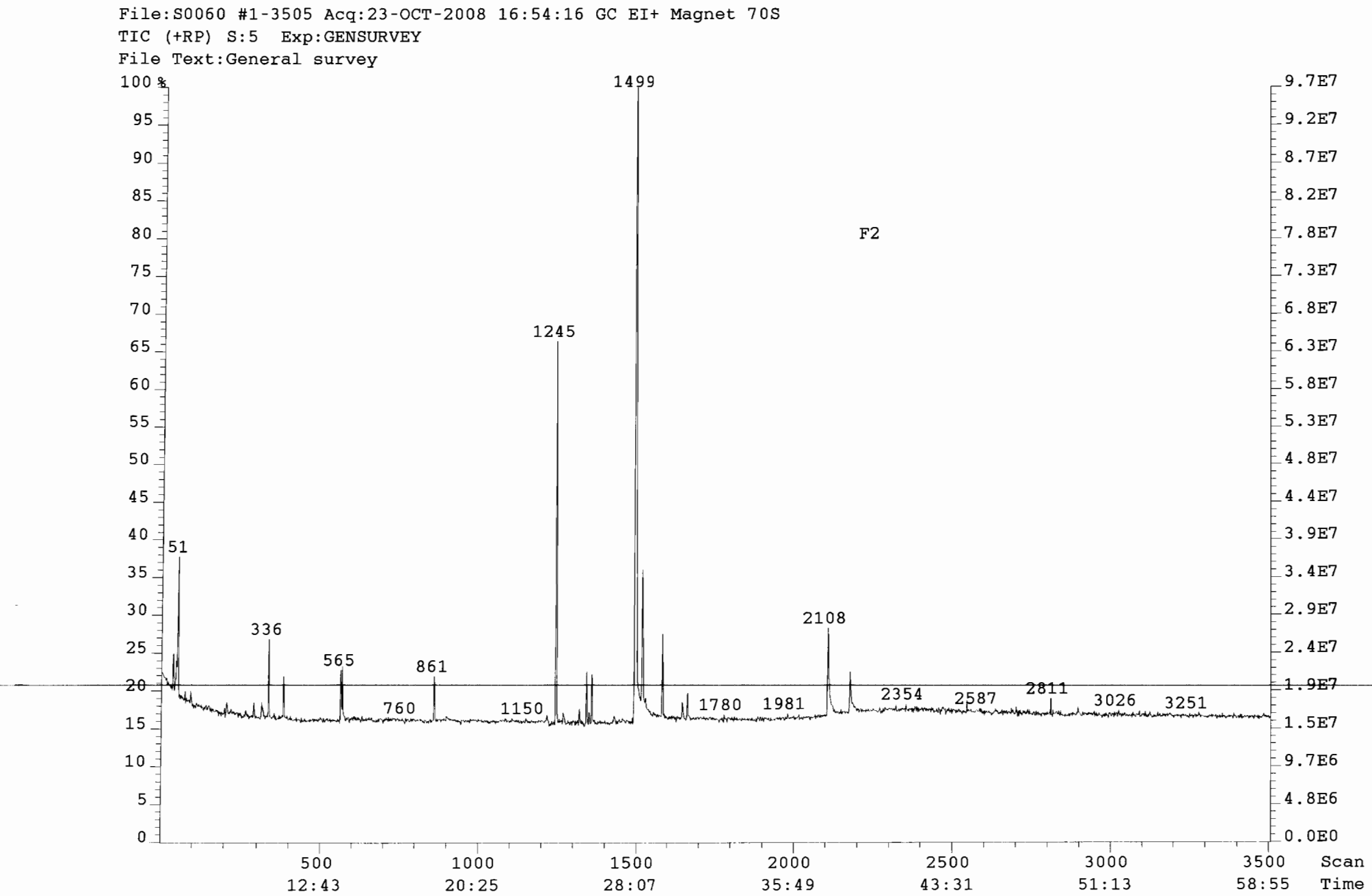
Reported By: H. A. Jones

Authorised By: J. Dunning
Laboratory Manager

Date: 13/11/08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1.9E7
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4.8E6
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43:31
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3500
58:55
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F2 DUP	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	17-Oct-08
Client Reference:	Samples Received 17/10/08	**Data System Code:**	S0060.5	**Date Analysed:**	23-Oct-08
WRc-NSF Reference:	N22649	**Associated Blank:**	S0060.4	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0036	d_6-Benzene	P	0.89	2.0	I.S.	Internal Standard
0046	Carbon tetrachloride	P	0.33	0.7	Bz	Contaminant
0051	Cyclohexane	P	5.71	12.8	Bz	Contaminant
0093	1,4-Dioxane	T	0.40	0.9	Bz	Contaminant
0205	Toluene	P	0.35	0.3	Cl	Contaminant
0289	Butyl acetate	P	0.53	0.5	Cl	Contaminant
0313	Diacetone alcohol	P	1.04	0.9	Cl	Contaminant
0336	d_5-Chlorobenzene	P	2.34	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	1.23	1.0	I.S.	Internal Standard
0565	d_5-Phenol	P	3.19	8.0	I.S.	Internal Standard
0861	d_8-Naphthalene	P	1.39	1.0	I.S.	Internal Standard
1245	d_{20}-BHT	P	12.98	8.0	I.S.	Internal Standard
1268	N,N-Diethyl-3-pyridinecarboxamide	T	0.70	0.4	BHT	Sample
1319	Diethyl phthalate	P	0.45	0.3	BHT	Contaminant
1342	d_{34}-Hexadecane	P	1.82	1.0	I.S.	Internal Standard
1351	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.49	0.3	BHT	Contaminant
1359	Unknown 173, 55, 99, 84	U	1.46	0.9	BHT	Contaminant
1499	N-Butylbenzenesulphonamide	P	51.31	31.6	BHT	Sample
1519	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.91	2.0	I.S.	Int. Std. + Contaminant
0152	Tris-(chloropropyl)phosphate isomer	T	0.35	0.2	BHT	Contaminant
1585	Di-isobutyl phthalate	P	2.63	1.6	BHT	Contaminant
1648	2-Phenyltridecane	T	0.60	0.4	BHT	Sample
1665	Di-n-butyl phthalate	P	0.98	0.6	BHT	Contaminant
2108	Di-(2-ethylhexyl) phthalate	P	6.26	15.2	Sq	Contaminant
2178	d_{62}-Squalane	P	3.29	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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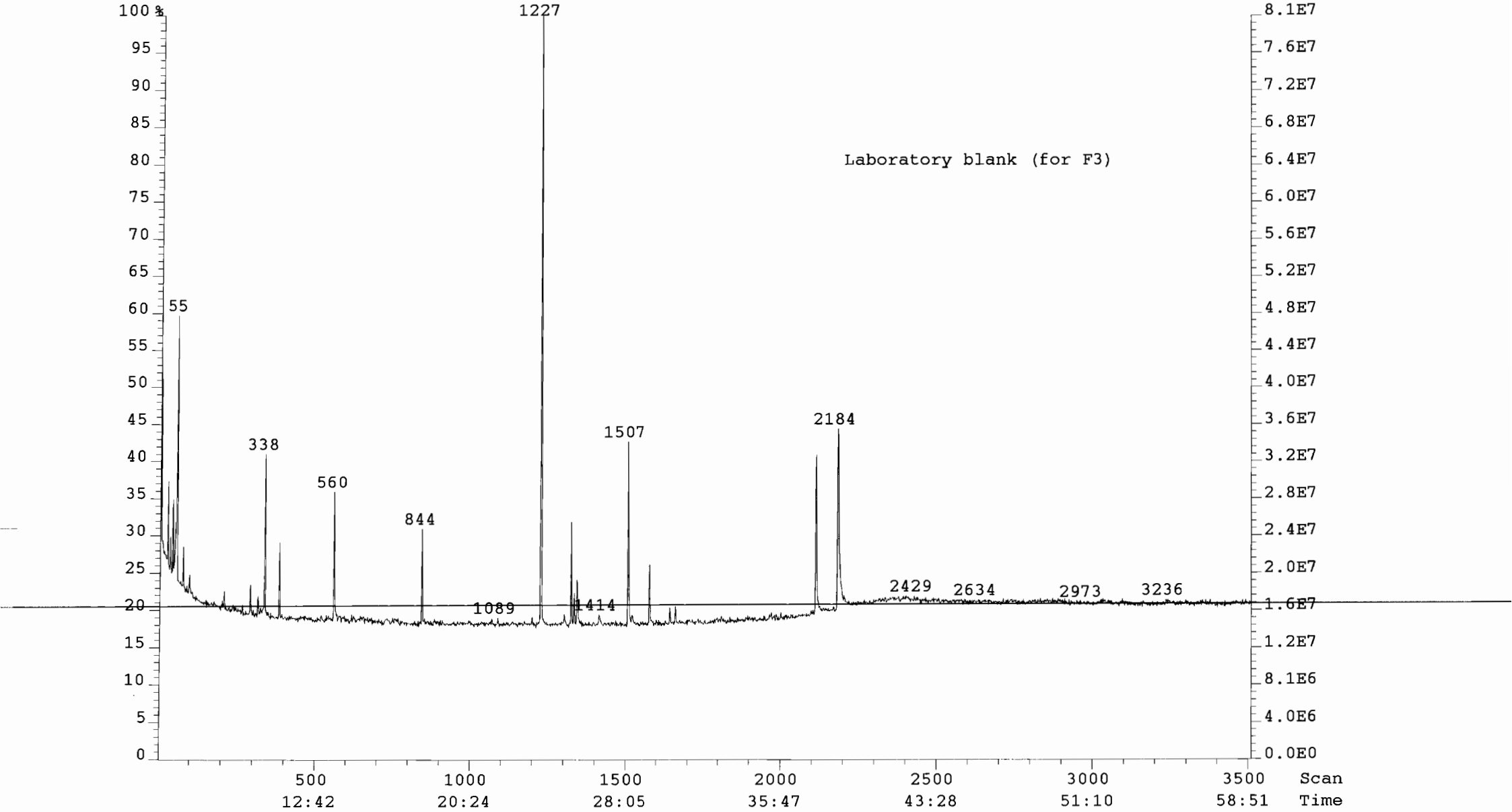
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 13/11/08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File Text:General Survey
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3.2E7
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12:42
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Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	02-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.2	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22673	**Associated Blank:**	n/a	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Actone	P	1.86	2.7	Bz	Contaminant
0024	2-Methyl-1,3-dioxolane	T	1.21	1.7	Bz	Contaminant
0033	Methyl isopropyl ketone	T	0.65	0.9	Bz	Contaminant
0041	d_6-Benzene	P	1.40	2.0	I.S.	Internal Standard
0050	Carbon tetrachloride	P	0.32	0.5	Bz	Contaminant
0055	Cyclohexane	P	7.87	11.2	Bz	Contaminant
0076	3-Penten-2-ol	T	0.77	1.1	Bz	Contaminant
0097	1,4-Dioxane	P	0.39	0.6	Bz	Contaminant
0209	Toluene	P	0.65	0.4	Cl	Contaminant
0291	Butyl acetate	P	0.74	0.5	Cl	Contaminant
0316	Diacetone alcohol	P	0.51	0.3	Cl	Contaminant
0338	d_5-Chlorobenzene	P	3.20	2.0	I.S.	Internal Standard
0385	d_{10}-p-Xylene	P	1.68	1.0	I.S.	Internal Standard
0560	d_5-Phenol	P	4.00	8.0	I.S.	Internal Standard
0844	d_8-Naphthalene	P	2.00	1.0	I.S.	Internal Standard
1227	d_{20}-BHT	P	16.85	8.0	I.S.	Internal Standard
1302	Diethyl phthalate	P	0.20	0.1	BHT	Contaminant
1325	d_{34}-Hexadecane	P	2.60	1.0	I.S.	Internal Standard
1334	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.76	0.4	BHT	Contaminant
1343	Unknown 173, 55, 99, 84	U	1.76	0.8	BHT	Contaminant
1507	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	6.64	2.0	I.S.	Int. Std. + Contaminant
1520	Tris-(chloropropyl)phosphate isomer	T	0.33	0.2	BHT	Contaminant
1577	Di-isobutyl phthalate	P	1.91	0.9	BHT	Contaminant
1643	2-Phenyltridecane	T	0.44	0.2	BHT	Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	02-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.2	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22673	**Associated Blank:**	n/a	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
1665	Di-n-butyl phthalate	P	0.55	0.3	BHT	Contaminant
2114	Di-(2-ethylhexyl) phthalate	P	6.64	4.3	Sq	Contaminant
2184	d_{62}-Squalane	P	12.30	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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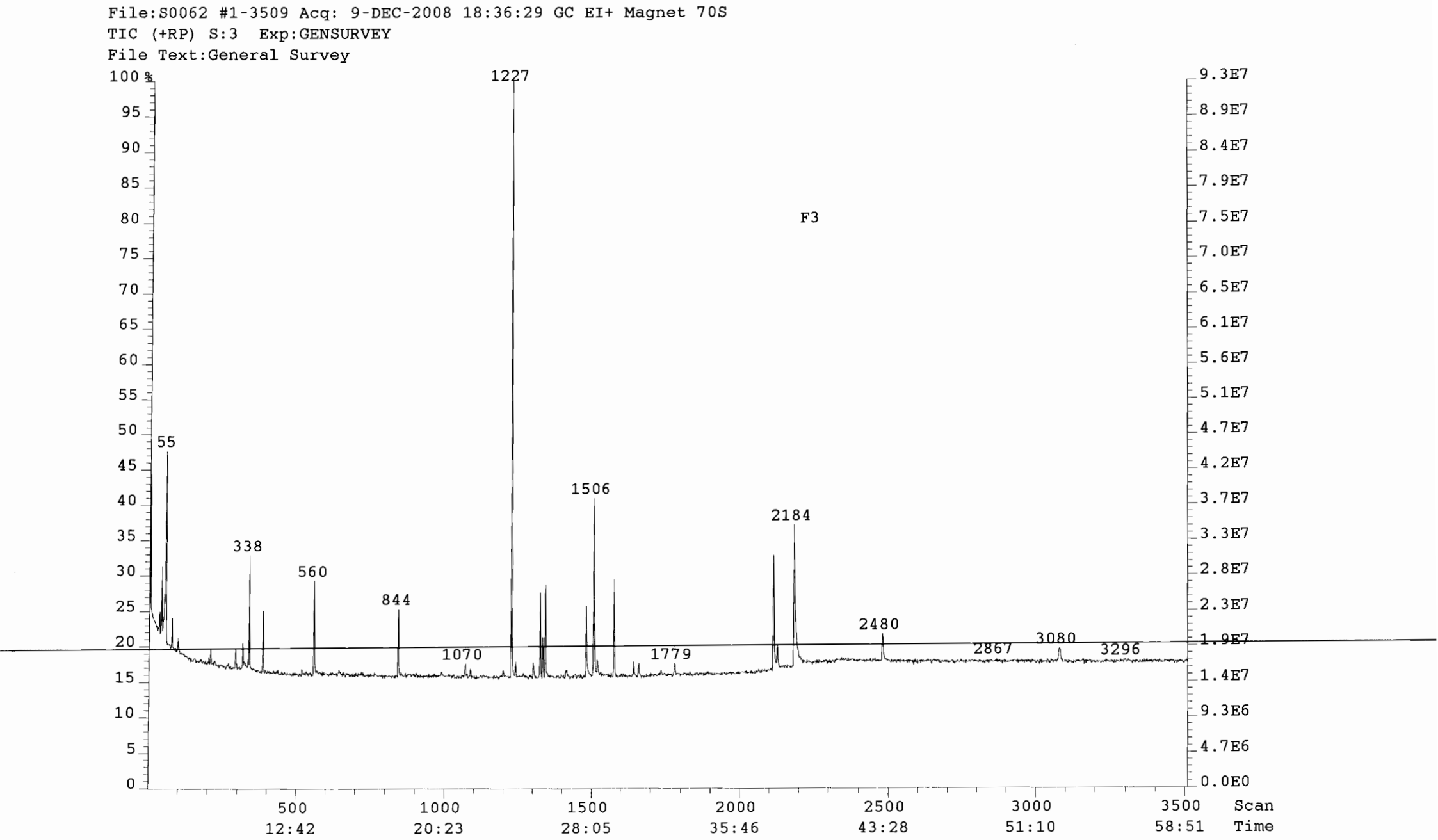
Reported By: H. A. Jones

Authorised By: J. Dunning
Laboratory Manager

Date: 13/1/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F3	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	02-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.3	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22673	**Associated Blank:**	S0062.2	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Acetone	P	2.25	3.3	Bz	Contaminant
0034	Methyl isopropyl ketone	T	0.57	0.8	Bz	Contaminant
0041	d_6-Benzene	P	1.38	2.0	I.S.	Internal Standard
0050	Carbon tetrachloride	P	0.20	0.3	Bz	Contaminant
0055	Cyclohexane	P	7.86	11.4	Bz	Contaminant
0077	3-Penten-2-ol	T	0.97	1.4	Bz	Contaminant
0098	1,4-Dioxane	P	0.23	0.3	Bz	Contaminant
0209	Toluene	P	0.54	0.4	Cl	Contaminant
0292	Butyl acetate	P	0.71	0.5	Cl	Contaminant
0316	Diacetone alcohol	P	0.56	0.4	Cl	Contaminant
0338	d_5-Chlorobenzene	P	2.98	2.0	I.S.	Internal Standard
0385	d_{10}-p-Xylene	P	1.56	1.0	I.S.	Internal Standard
0560	d_5-Phenol	P	3.74	8.0	I.S.	Internal Standard
0844	d_8-Naphthalene	P	2.14	1.0	I.S.	Internal Standard
1227	d_{20}-BHT	P	18.39	8.0	I.S.	Internal Standard
1241	BHT	P	0.47	0.2	BHT	Test Material
1301	Diethyl phthalate	P	0.20	0.1	BHT	Contaminant
1324	d_{34}-Hexadecane	P	2.60	1.0	I.S.	Internal Standard
1333	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.76	0.3	BHT	Contaminant
1342	Unknown 173, 55, 99, 84	U	1.76	0.8	BHT	Contaminant
1481	N-Butylbenzenesulphonamide	P	3.39	1.5	BHT	Test Material
1506	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.02	2.0	I.S.	Int. Std. + Contaminant
1518	Tris-(chloropropyl)phosphate isomer	T	0.64	0.3	BHT	Contaminant
1577	Di-isobutyl phthalate	P	3.30	1.4	BHT	Contaminant
1643	2-Phenyltridecane	T	0.44	0.2	BHT	Contaminant
1660	Di-n-butyl phthalate	P	0.80	0.3	BHT	Contaminant
1779	Unknown 42, 71, 41, 43	U	0.51	0.2	BHT	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F3	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	02-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.3	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22673	**Associated Blank:**	S0062.2	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2113	Di-(2-ethylhexyl) phthalate	P	6.43	4.0	Sq	Contaminant
2126	Unknown 42, 41, 71, 27	U	0.95	0.6	Sq	Test Material
2184	d_{62}-Squalane	P	12.89	8.0	I.S.	Internal Standard
2480	Unknown 42, 41, 71, 39	U	1.84	1.1	Sq	Test Material
3080	Unknown 42, 41, 71, 27	U	1.34	0.8	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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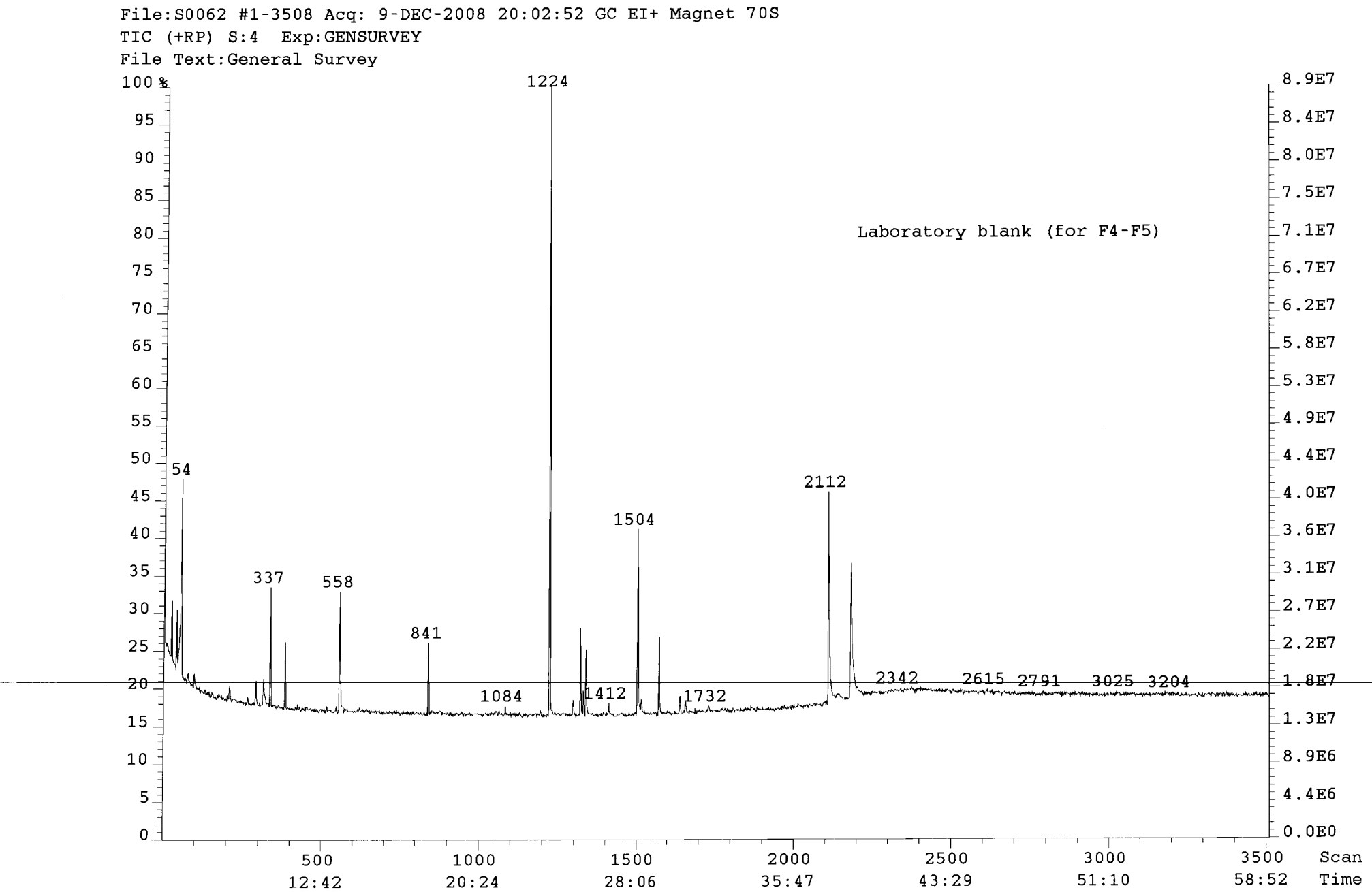
Authorised By: J. Dunning
Laboratory Manager

Date: 13/1/09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File Text:General Survey
Laboratory blank (for F4-F5)
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75
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7.5E7
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6.7E7
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3.1E7
2.7E7
2.2E7
1.8E7
1.3E7
8.9E6
4.4E6
0.0E0
54
337
558
841
1084
1224
1412
1504
1732
2112
2342
2615
2791
3025
3204
500
12:42
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1500
28:06
2000
35:47
2500
43:29
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	03-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.4	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22674	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0023	Methyl isopropyl ketone	T	1.12	1.6	Bz	Contaminant
0040	d_6-Benzene	P	1.37	2.0	I.S.	Internal Standard
0049	Carbon tetrachloride	P	0.31	0.5	Bz	Contaminant
0054	Cyclohexane	P	7.89	11.5	Bz	Contaminant
0078	Methyl isobutyl ketone	T	0.32	0.5	Bz	Contaminant
0097	1,4-Dioxane	P	0.45	0.7	Bz	Contaminant
0208	Toluene	P	0.46	0.3	Cl	Contaminant
0291	Butyl acetate	P	0.49	0.3	Cl	Contaminant
0315	Diacetone alcohol	P	1.08	0.7	Cl	Contaminant
0337	d_5-Chlorobenzene	P	2.95	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	1.72	1.0	I.S.	Internal Standard
0558	d_5-Phenol	P	3.57	8.0	I.S.	Internal Standard
0841	d_8-Naphthalene	P	1.99	1.0	I.S.	Internal Standard
1224	d_{20}-BHT	P	17.21	8.0	I.S.	Internal Standard
1298	Diethyl phthalate	P	0.47	0.2	BHT	Contaminant
1322	d_{34}-Hexadecane	P	2.64	1.0	I.S.	Internal Standard
1330	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.67	0.3	BHT	Contaminant
1339	Unknown 173, 55, 99, 84	U	2.29	1.1	BHT	Contaminant
1504	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	6.83	2.0	I.S.	Int. Std. + Contaminant
1516	Tris-(chloropropyl)phosphate isomer	T	0.31	0.1	BHT	Contaminant
1575	Di-isobutyl phthalate	P	2.53	1.2	BHT	Contaminant
1642	2-Phenyltridecane	T	0.62	0.3	BHT	Contaminant
1658	Di-n-butyl phthalate	P	0.55	0.3	BHT	Contaminant
2112	Di-(2-ethylhexyl) phthalate	P	9.88	7.4	Sq	Contaminant
2183	d_{62}-Squalane	P	10.69	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

Tests marked $: Not included in the WRc-NSF UKAS Accreditation Schedule.

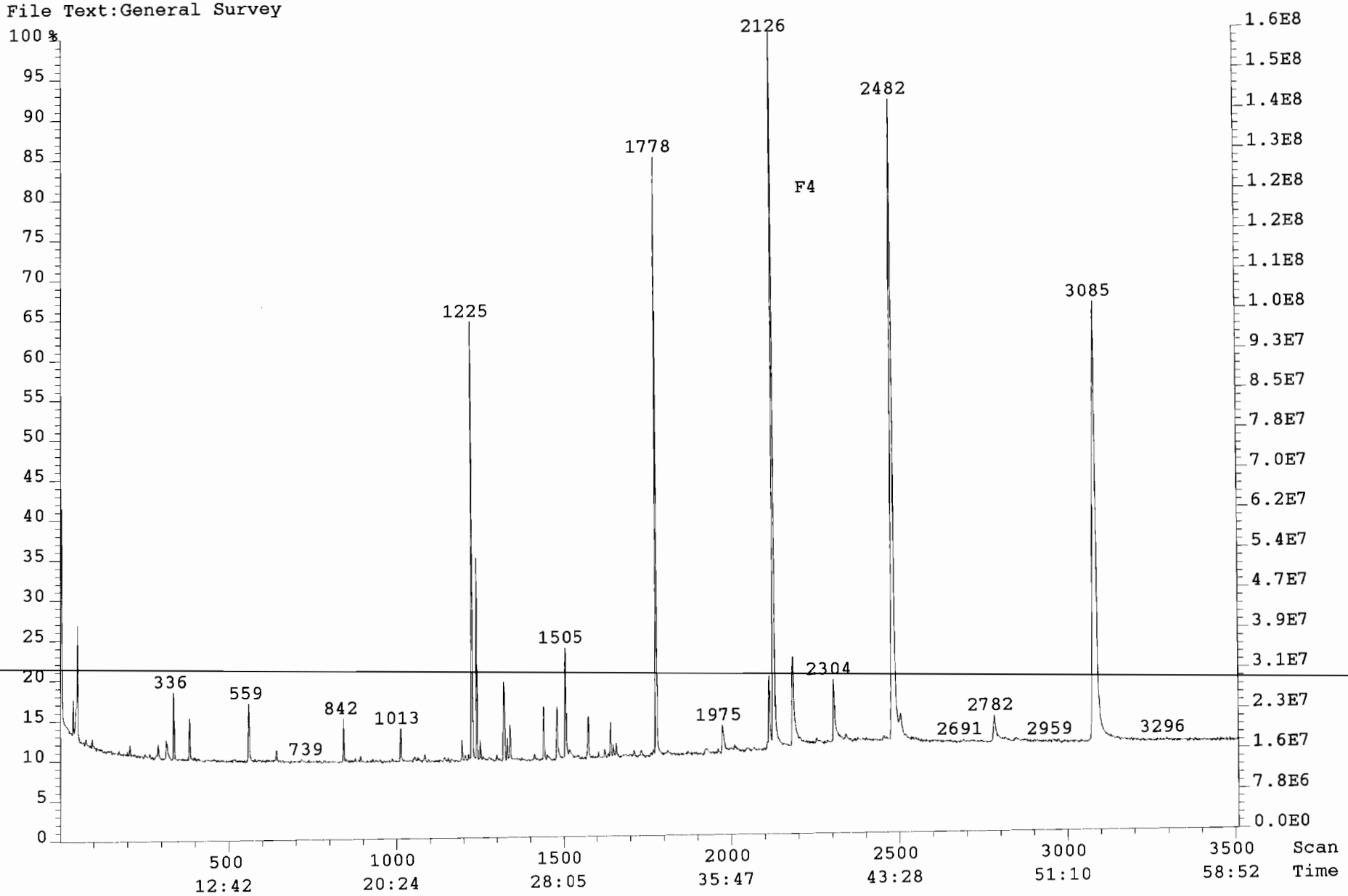
Tests marked @: Tests not performed by WRc-NSF, approved subcontractor is not UKAS accredited for this test.

Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: A. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 14/1/09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F4
1225
3085
1505
2304
336
559
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1013
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58:52
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F4	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	03-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.5	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22674	**Associated Blank:**	S0062.4	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0004	iso-Butanol	T	6.12	8.4	Bz	Test Material
0038	d_6-Benzene	P	1.45	2.0	I.S.	Internal Standard
0048	Carbon tetrachloride	P	0.35	0.5	Bz	Contaminant
0052	Cyclohexane	P	7.40	10.2	Bz	Contaminant
0095	1,4-Dioxane	P	0.40	0.6	Bz	Contaminant
0207	Toluene	P	0.59	0.4	Cl	Contaminant
0290	Butyl acetate	P	0.54	0.4	Cl	Contaminant
0314	Diacetone alcohol	P	1.64	1.1	Cl	Contaminant
0336	d_5-Chlorobenzene	P	2.94	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	1.82	1.0	I.S.	Internal Standard
0559	d_5-Phenol	P	4.29	8.0	I.S.	Internal Standard
0642	2-Ethylhexanol	P	0.57	0.4	Cl	Test Material
0842	d_8-Naphthalene	P	2.01	1.0	I.S.	Internal Standard
1013	Unknown 101, 42, 54,55	U	1.87	0.7	BHT	Test Material
1196	2,6-Di-t-butyl-2,5-cyclohexadiene-1-one	P	1.01	0.4	BHT	Test Material
1225	d_{20}-BHT	P	20.91	8.0	I.S.	Internal Standard
1239	BHT	P	8.89	3.4	BHT	Test Material
1250	1,6-Dioxacyclododecane-7,12,-dione	T	0.86	0.3	BHT	Test Material
1320	Unknown 71, 55, 41, 43 (M^+ 216?)	U	6.73	2.6	BHT	Test Material
1322	d_{34}-Hexadecane	P		1.0	I.S.	Internal Standard
1331	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.82	0.3	BHT	Contaminant
1339	Unknown 173, 55, 99, 84	U	1.98	0.8	BHT	Contaminant
1441	Unknown 55, 42, 101, 41 (M^+ 229)	U	2.95	1.1	BHT	Test Material
1480	N-Butylbenzenesulphonamide	P	4.66	1.8	BHT	Test Material
1505	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.18	2.0	I.S.	Int. Std. + Contaminant
1517	Tris-(chloropropyl)phosphate isomer	T	0.39	0.1	BHT	Contaminant
1576	Di-isobutyl phthalate	P	2.37	0.9	BHT	Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F4	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	03-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.5	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22674	**Associated Blank:**	S0062.4	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
1642	2-Phenyltridecane	T	0.27	0.1	BHT	Contaminant
1650	Methyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate	T	0.66	0.3	BHT	Test Material
1659	Di-n-butyl phthalate	P	0.54	0.2	BHT	Contaminant
1778	Unknown 71, 42, 55, 43 (M^+ 288)	U	36.80	14.1	BHT	Test Material
1975	Unknown 42, 41, 71, 72	U	3.21	1.2	BHT	Test Material
2113	Di-(2-ethylhexyl) phthalate	P	4.52	2.8	Sq	Contaminant
2126	Unknown 42, 71, 41, 43 (M^+ 360)	U	58.70	36.9	Sq	Test Material
2184	d_{62}-Squalane	P	12.71	8.0	I.S.	Internal Standard
2304	Unknown 42, 41, 71, 39	U	7.61	4.8	Sq	Test Material
2482	Unknown 42, 71, 41, 72 (M^+ 432)	U	96.50	60.7	Sq	Test Material
2504	Unknown 221, 250, 180, 132 (M^+ 340)	U	1.77	1.1	Sq	Test Material
2782	Unknown 42, 41, 71, 39	U	3.64	2.3	Sq	Test Material
3085	Unknown 42, 41, 71, 27 (M^+ 504)	U	97.04	61.1	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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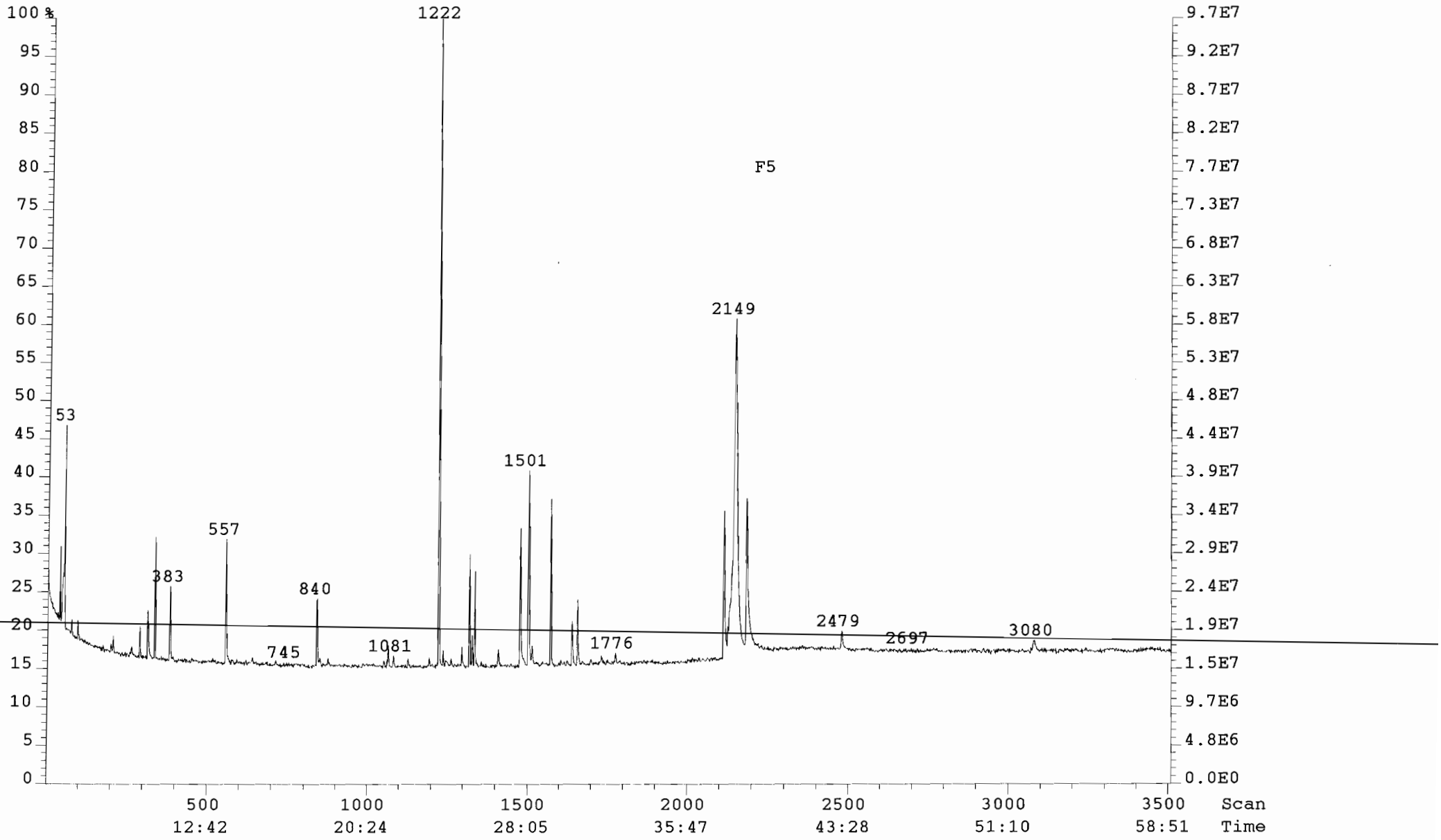
Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 14/1/09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File Text:General Survey
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F5	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	03-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.6	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22674	**Associated Blank:**	S0062.4	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0039	d_6-Benzene	P	1.68	2.0	I.S.	Internal Standard
0048	Carbon tetrachloride	P	0.36	0.4	Bz	Contaminant
0053	Cyclohexane	P	8.32	9.9	Bz	Contaminant
0076	Methyl isobutyl ketone	T	0.39	0.5	Bz	Contaminant
0095	1,4-Dioxane	P	0.41	0.5	Bz	Contaminant
0207	Toluene	P	0.56	0.3	Cl	Contaminant
0290	Butyl acetate	P	0.88	0.5	Cl	Contaminant
0314	Diacetone alcohol	P	2.08	1.2	Cl	Contaminant
0336	d_5-Chlorobenzene	P	3.54	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	2.06	1.0	I.S.	Internal Standard
0557	d_5-Phenol	P	4.17	8.0	I.S.	Internal Standard
0840	d_8-Naphthalene	P	2.28	1.0	I.S.	Internal Standard
1065	Dodecamethylcyclohexasiloxane	T	0.60	0.2	BHT	Test Material
1081	2,4,4-Trimethylpentane-1,3-diol mono-isobutyrate	T	0.53	0.2	BHT	Test Material
1192	2,-Di-t-butyl-4-methylene-2,5-cyclohexadien-1-one	T	0.42	0.2	BHT	Test Material
1222	d_{20}-BHT	P	20.68	8.0	I.S.	Internal Standard
1235	BHT	P	0.54	0.2	BHT	Test Material
1295	Diethyl phthalate	P	0.76	0.3	BHT	Contaminant
1319	d_{34}-Hexadecane	P	3.29	1.0	I.S.	Internal Standard
1327	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	1.09	0.4	BHT	Contaminant
1336	Unknown 173, 55, 99, 84	U	3.35	1.3	BHT	Contaminant
1409	Unknown 41, 55, 81, 43	U	0.52	0.2	BHT	Test Material
1476	N-Butylbenzenesulphonamide	P	6.65	2.6	BHT	Test Material
1501	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	9.24	2.0	I.S.	Int. Std. + Contaminant
1513	Tris-(chloropropyl)phosphate isomer	T	0.31	0.1	BHT	Contaminant
1573	Di-isobutyl phthalate	P	2.53	1.0	BHT	Contaminant
1640	2-Phenyltridecane	T	0.62	0.2	BHT	Contaminant
1657	Di-n-butyl phthalate	P	0.55	0.2	BHT	Contaminant
2113	Di-(2-ethylhexyl) phthalate	P	9.88	5.5	Sq	Contaminant
2149	Unknown 42, 41, 71, 27	U	62.50	35.1	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F5	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	03-Dec-08
Client Reference:	Samples Received 02/12/08	**Data System Code:**	S0062.6	**Date Analysed:**	09-Dec-08
WRc-NSF Reference:	N22674	**Associated Blank:**	S0062.4	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2183	d_{62}-Squalane	P	14.25	8.0	I.S.	Internal Standard
2479	Unknown 42, 41, 71, 27	U	1.14	0.6	Sq	Test Material
3080	Unknown 42, 41, 71, 39	U	1.41	0.8	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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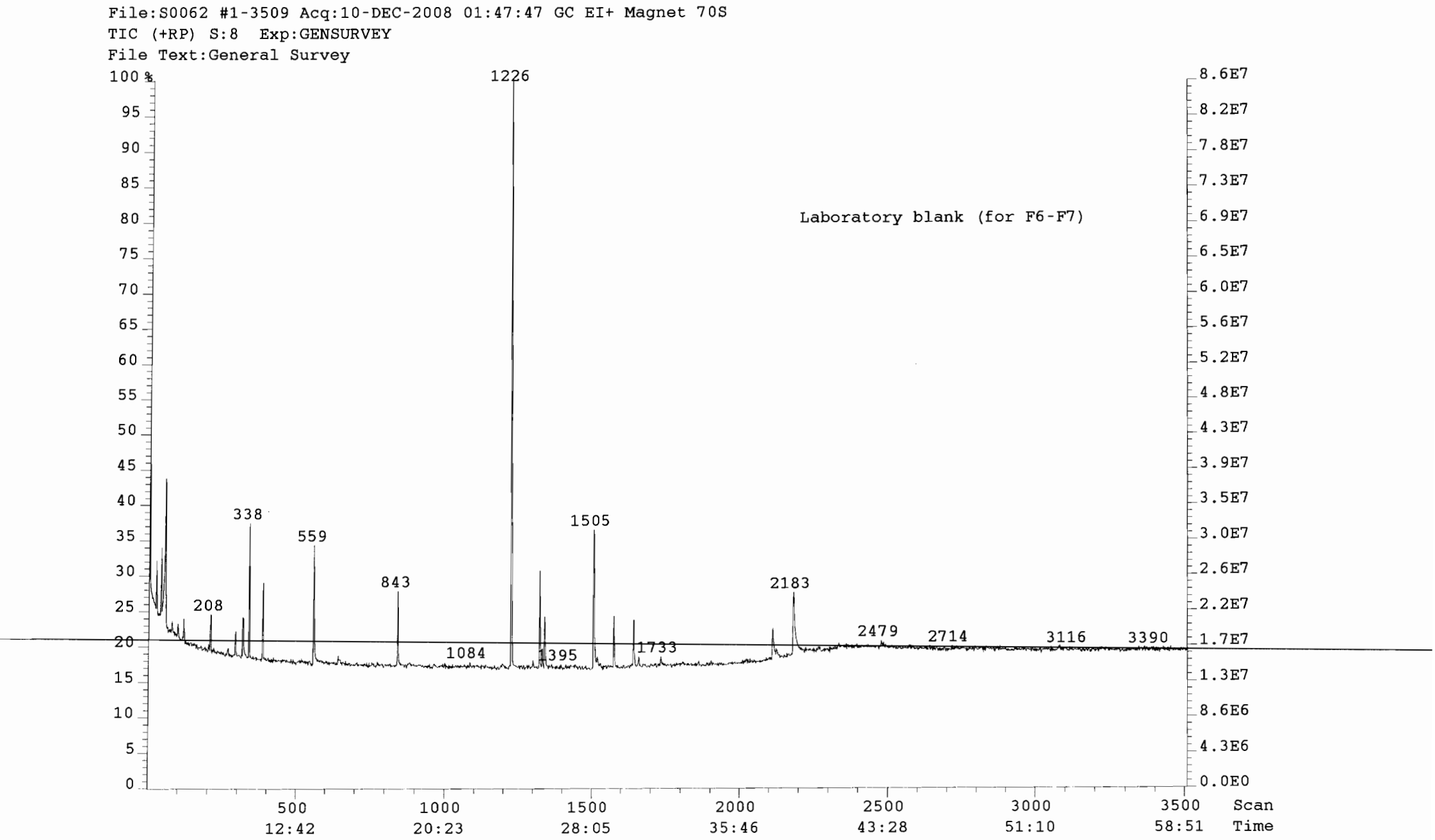
Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: J. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 20/1/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	05-Dec-08
Client Reference:	Samples Received 05/12/08	**Data System Code:**	S0062.8	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22676	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Acetone	P	2.29	2.7	Bz	Contaminant
0024	2-Methyl-1,3-dioxolane	T	1.58	1.8	Bz	Contaminant
0041	d_6-Benzene	P	1.72	2.0	I.S.	Internal Standard
0050	Carbon tetrachloride	P	7.06	8.2	Bz	Contaminant
0054	Cyclohexane	P				Contaminant
0079	Methyl isobutyl ketone	T	0.36	0.4	Bz	Contaminant
0098	1,4-Dioxane	P	0.42	0.5	Bz	Contaminant
0118	n-Heptane	P	0.77	0.9	Bz	Contaminant
0208	Toluene	P	1.42	0.8	Cl	Contaminant
0292	Butyl acetate	P	0.79	0.5	Cl	Contaminant
0317	Diacetone alcohol	P	2.24	1.3	Cl	Contaminant
0338	d_5-Chlorobenzene	P	3.43	2.0	I.S.	Internal Standard
0385	d_{10}-p-Xylene	P	2.12	1.0	I.S.	Internal Standard
0559	d_5-Phenol	P	4.31	8.0	I.S.	Internal Standard
0843	d_8-Naphthalene	P	2.46	1.0	I.S.	Internal Standard
1226	d_{20}-BHT	P	18.92	8.0	I.S.	Internal Standard
1323	d_{34}-Hexadecane	P	2.81	1.0	I.S.	Internal Standard
1332	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.60	0.3	BHT	Contaminant
1340	Unknown 173, 55, 99, 84	U	1.94	0.8	BHT	Contaminant
1505	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	7.15	2.0	I.S.	Int. Std. + Contaminant
1517	Tris-(chloropropyl)phosphate isomer	T	0.31	0.1	BHT	Contaminant
1576	Di-isobutyl phthalate	P	1.74	0.7	BHT	Contaminant
1642	2-Phenyltridecane	T	1.94	0.8	BHT	Contaminant
1659	Di-n-butyl phthalate	P	0.31	0.1	BHT	Contaminant
2113	Di-(2-ethylhexyl) phthalate	P	2.99	4.0	Sq	Contaminant
2183	d_{62}-Squalane	P	6.03	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

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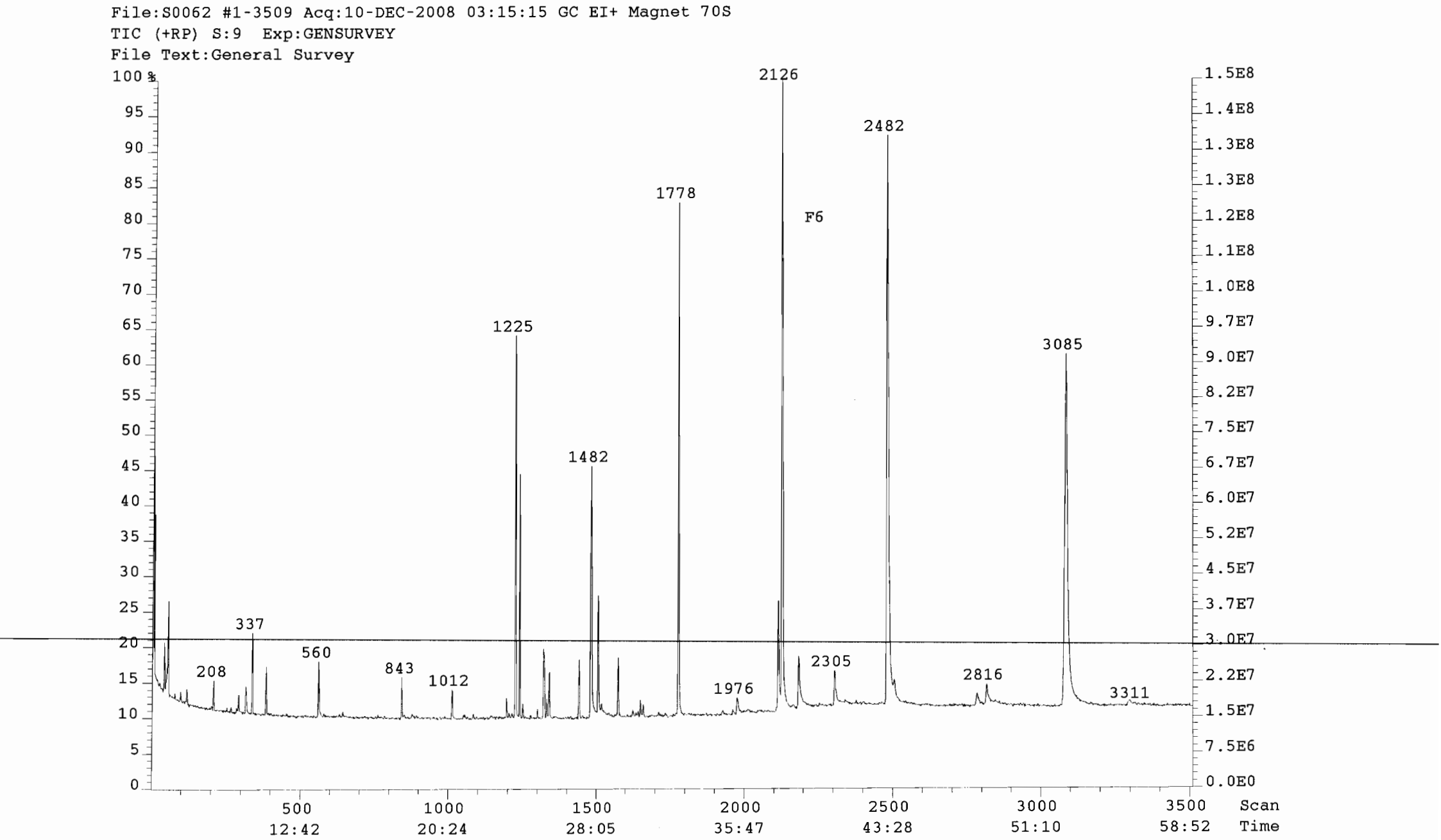
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 20/1/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F6	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	05-Dec-08
Client Reference:	Samples Received 05/12/08	**Data System Code:**	S0062.9	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22676	**Associated Blank:**	S0062.8	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Tetrahydrofuran	P	8.76	8.9	Bz	
0005	iso-Butanol	T	5.30	5.4	Bz	Test Material
0040	d_6-Benzene	P	1.97	2.0	I.S.	Internal Standard
0049	Carbon tetrachloride	P	0.46	0.5	Bz	Contaminant
0054	Cyclohexane	P	6.69	6.8	Bz	Contaminant
0078	Methyl isobutyl ketone	T	0.27	0.3	Bz	Contaminant
0097	1,4-Dioxane	P	0.30	0.3	Bz	Contaminant
0118	n-Heptane	P	0.56	0.6	Bz	Contaminant
0208	Toluene	P	1.47	0.8	Cl	Contaminant
0291	Butyl acetate	P	0.69	0.4	Cl	Contaminant
0315	Diacetone alcohol	P	1.92	1.0	Cl	Contaminant
0337	d_5-Chlorobenzene	P	3.75	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	2.23	1.0	I.S.	Internal Standard
0560	d_5-Phenol	P	4.81	8.0	I.S.	Internal Standard
0843	d_8-Naphthalene	P	2.12	1.0	I.S.	Internal Standard
1013	Unknown 101, 42, 54,55	U	1.87	0.7	BHT	Test Material
1196	2,6-Di-t-butyl-2,5-cyclohexadiene-1-one	P	0.91	0.3	BHT	Test Material
1225	d_{20}-BHT	P	21.46	8.0	I.S.	Internal Standard
1239	BHT	P	12.16	4.5	BHT	Test Material
1250	1,6-Dioxacyclododecane-7,12,-dione	T	0.87	0.3	BHT	Test Material
1299	Diethyl phthalate	P	0.50	0.2	BHT	Contaminant
1320	Unknown 71, 55, 41, 43 (M^+ 216?)	U	6.60	2.5	BHT	Test Material
1323	d_{34}-Hexadecane	P		1.0	I.S.	Internal Standard
1331	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.89	0.3	BHT	Contaminant
1340	Unknown 173, 55, 99, 84	U	2.66	1.0	BHT	Contaminant
1441	Unknown 55, 42, 101, 41 (M^+ 229)	U	3.52	1.3	BHT	Test Material
1482	N-Butylbenzenesulphonamide	P	27.82	10.4	BHT	Test Material
1505	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.30	2.0	I.S.	Int. Std. + Contaminant
1517	Tris-(chloropropyl)phosphate isomer	T	0.66	0.2	BHT	Contaminant
1576	Di-isobutyl phthalate	P	3.27	1.2	BHT	Contaminant
1650	Methyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate	T	0.79	0.3	BHT	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F6	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	05-Dec-08
Client Reference:	Samples Received 05/12/08	**Data System Code:**	S0062.9	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22676	**Associated Blank:**	S0062.8	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
1659	Di-n-butyl phthalate	P	0.65	0.2	BHT	Contaminant
1778	Unknown 71, 42, 55, 43 (M^+ 288)	U	34.57	12.9	BHT	Test Material
1976	Unknown 42, 41, 71, 72	U	2.53	0.9	BHT	Test Material
2113	Di-(2-ethylhexyl) phthalate	P	9.91	10.0	Sq	Contaminant
2126	Unknown 42, 71, 41, 43 (M^+ 360)	U	60.38	61.1	Sq	Test Material
2183	d_{62}-Squalane	P	7.91	8.0	I.S.	Internal Standard
2305	Unknown 42, 41, 71, 39	U	4.88	4.9	Sq	Test Material
2482	Unknown 42, 71, 41, 72 (M^+ 432)	U	94.94	96.0	Sq	Test Material
2504	Unknown 221, 250, 180, 132 (M^+ 340)	U	1.42	1.4	Sq	Test Material
2784	Unknown 42, 41, 71, 39	U	2.94	3.0	Sq	Test Material
2816	Unknown 57, 45, 101, 41	U	3.83	3.9	Sq	Test Material
3085	Unknown 42, 41, 71, 27 (M^+ 504)	U	90.93	92.0	Sq	Test Material
3311	Unknown 57, 45, 41, 29	U	0.96	1.0	Sq	Test Material

Internal standards used. Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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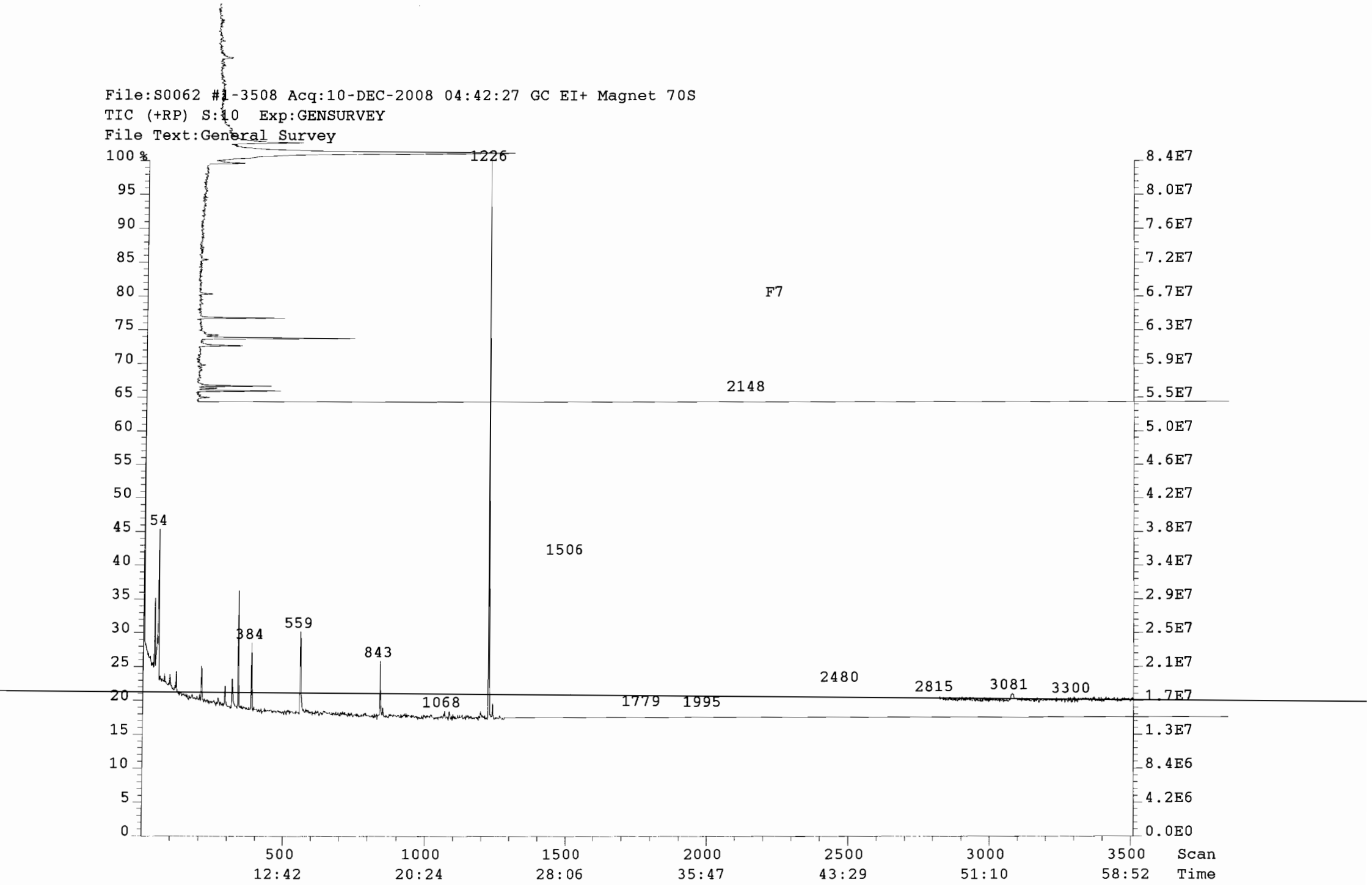
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 20/1/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F7	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	05-Dec-08
Client Reference:	Samples Received 05/12/08	**Data System Code:**	S0062.10	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22676	**Associated Blank:**	S0062.8	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0040	d_6-Benzene	P	1.39	2.0	I.S.	Internal Standard
0049	Carbon tetrachloride	P	0.29	0.4	Bz	Contaminant
0054	Cyclohexane	P	5.49	7.9	Bz	Contaminant
0077	Methyl isobutyl ketone	T	0.16	0.2	Bz	Contaminant
0096	1,4-Dioxane	P	0.28	0.4	Bz	Contaminant
0118	n-Heptane	P	0.51	0.7	Bz	Contaminant
0207	Toluene	P	1.12	0.7	Cl	Contaminant
0290	Butyl acetate	P	0.69	0.4	Cl	Contaminant
0315	Diacetone alcohol	P	1.13	0.7	Cl	Contaminant
0337	d_5-Chlorobenzene	P	3.11	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	1.82	1.0	I.S.	Internal Standard
0559	d_5-Phenol	P	3.15	8.0	I.S.	Internal Standard
0843	d_8-Naphthalene	P	1.75	1.0	I.S.	Internal Standard
1226	d_{20}-BHT	P	17.75	8.0	I.S.	Internal Standard
1240	BHT	P	0.41	0.2	BHT	Test Material
1300	Diethyl phthalate	P	0.38	0.2	BHT	Contaminant
1323	d_{34}-Hexadecane	P	2.70	1.0	I.S.	Internal Standard
1332	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.53	0.2	BHT	Contaminant
1340	Unknown 173, 55, 99, 84	U	2.83	1.3	BHT	Contaminant
1480	N-Butylbenzenesulphonamide	P	2.64	1.2	BHT	Test Material
1506	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	7.71	2.0	I.S.	Int. Std. + Contaminant
1517	Tris-(chloropropyl)phosphate isomer	T	0.50	0.2	BHT	Contaminant
1576	Di-isobutyl phthalate	P	2.94	1.3	BHT	Contaminant
1660	Di-n-butyl phthalate	P	0.57	0.3	BHT	Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F7	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	05-Dec-08
Client Reference:	Samples Received 05/12/08	**Data System Code:**	S0062.10	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22676	**Associated Blank:**	S0062.8	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2113	Di-(2-ethylhexyl) phthalate	P	1.92	2.0	Sq	Contaminant
2148	Unknown 42, 41, 71, 27	U	65.33	69.1	Sq	Test Material
2183	d_{62}-Squalane	P	7.56	8.0	I.S.	Internal Standard
2480	Unknown 42, 41, 71, 27	U	0.97	1.0	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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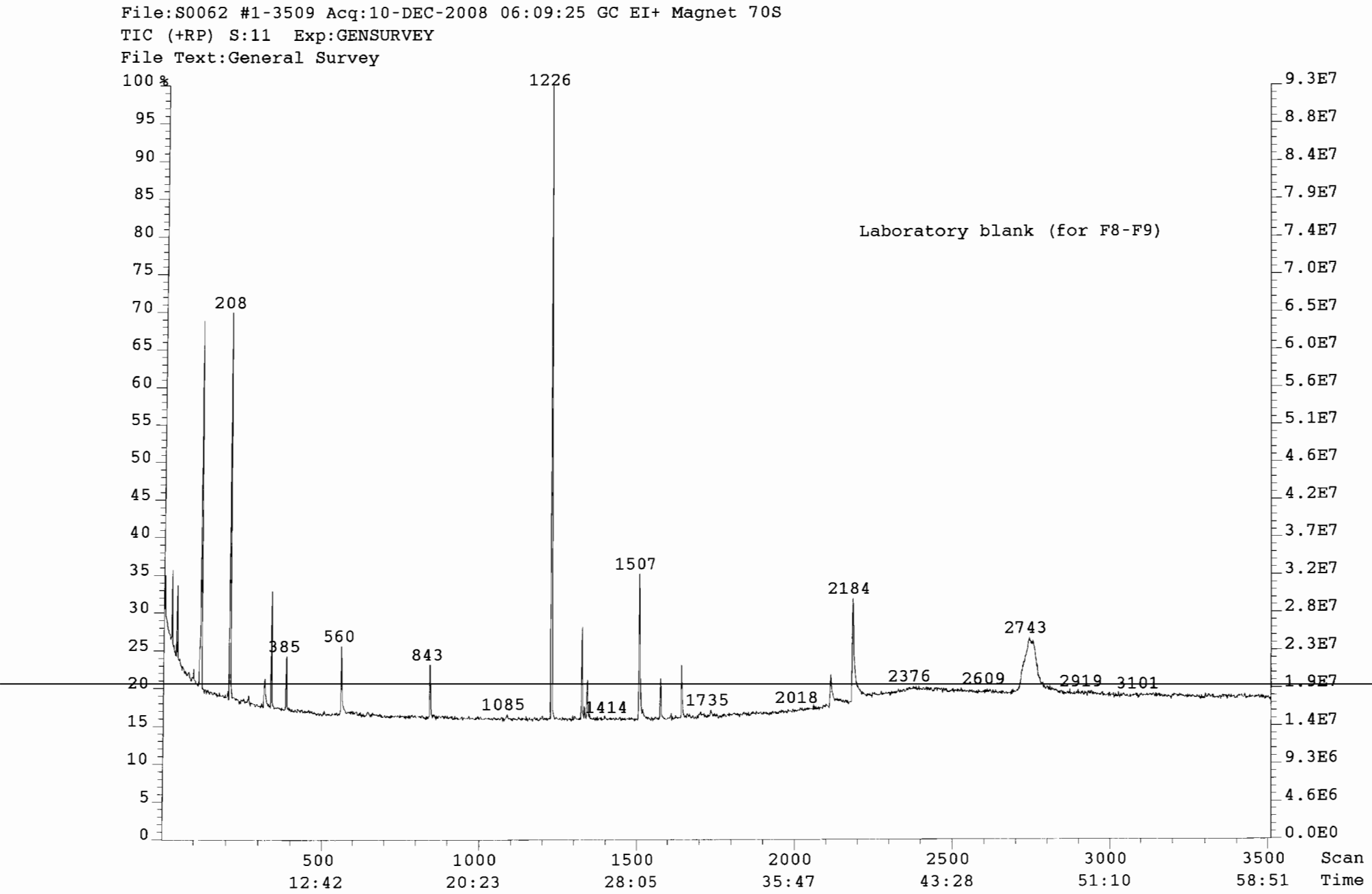
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 28/1/09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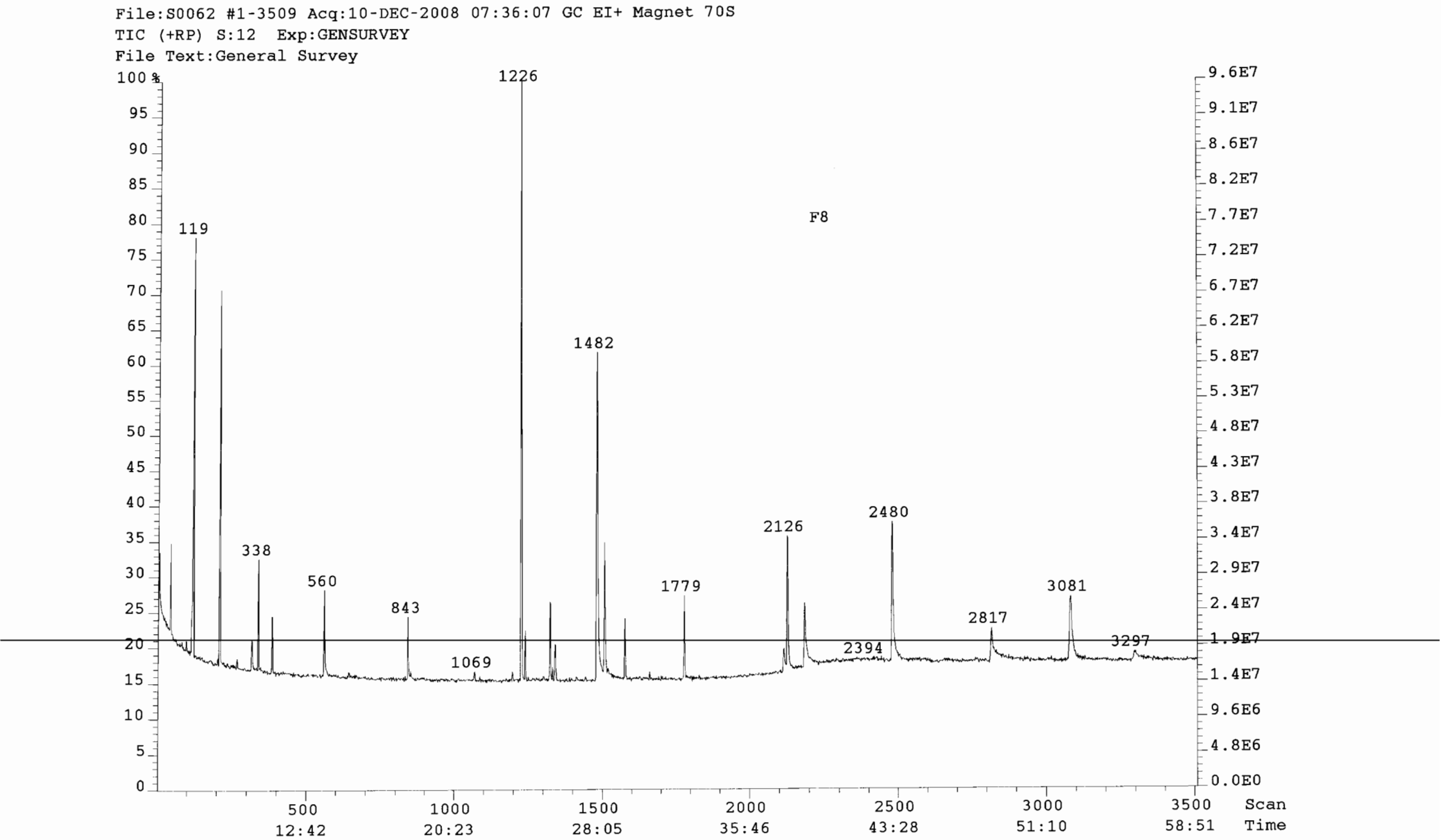
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Scan
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ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F8	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	08-Dec-08
Client Reference:	Samples Received 08/12/08	**Data System Code:**	S0062.12	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22677	**Associated Blank:**	S0062.11	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Acetone	P	1.17	1.2	Bz	
0041	d_6-Benzene	P	1.94	2.0	I.S.	Internal Standard
0119	n-Heptane	P	14.89	15.4	Bz	Contaminant
0208	Toluene	P	12.19	7.1	Cl	Contaminant
0316	Diacetone alcohol	P	1.53	0.9	Cl	Contaminant
0338	d_5-Chlorobenzene	P	3.41	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	2.03	1.0	I.S.	Internal Standard
0560	d_5-Phenol	P	4.08	8.0	I.S.	Internal Standard
0843	d_8-Naphthalene	P	1.94	1.0	I.S.	Internal Standard
1226	d_{20}-BHT	P	19.61	8.0	I.S.	Internal Standard
1240	BHT	P	1.64	0.7	BHT	Test Material
1323	d_{34}-Hexadecane	P	3.01	1.0	I.S.	Internal Standard
1332	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.36	0.1	BHT	Contaminant
1340	Unknown 173, 55, 99, 84	U	1.71	0.7	BHT	Contaminant
1482	N-Butylbenzenesulphonamide	P	24.80	10.1	BHT	Test Material
1506	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	6.63	2.0	I.S.	Int. Std. + Contaminant
1518	Tris-(chloropropyl)phosphate isomer	T	0.30	0.1	BHT	Contaminant
1570	Di-isobutyl phthalate	P	2.13	0.9	BHT	Contaminant
1779	Unknown 71, 42, 55, 43 (M^+ 288)	U	3.59	1.5	BHT	Test Material
2114	Di-(2-ethylhexyl) phthalate	P	1.63	2.0	Sq	Contaminant
2126	Unknown 42, 71, 41, 43 (M^+ 360)	U	7.10	8.8	Sq	Test Material
2184	d_{62}-Squalane	P	6.46	8.0	I.S.	Internal Standard
2480	Unknown 42, 71, 41, 72 (M^+ 432)	U	12.04	14.9	Sq	Test Material
2817	Unknown 57, 45, 101, 41	U	7.36	9.1	Sq	Test Material
3081	Unknown 42, 41, 71, 27 (M^+ 504)	U	10.03	12.4	Sq	Test Material
3297	Unknown 57, 45, 41, 101 [M^+ 405?]	U	0.96	1.2	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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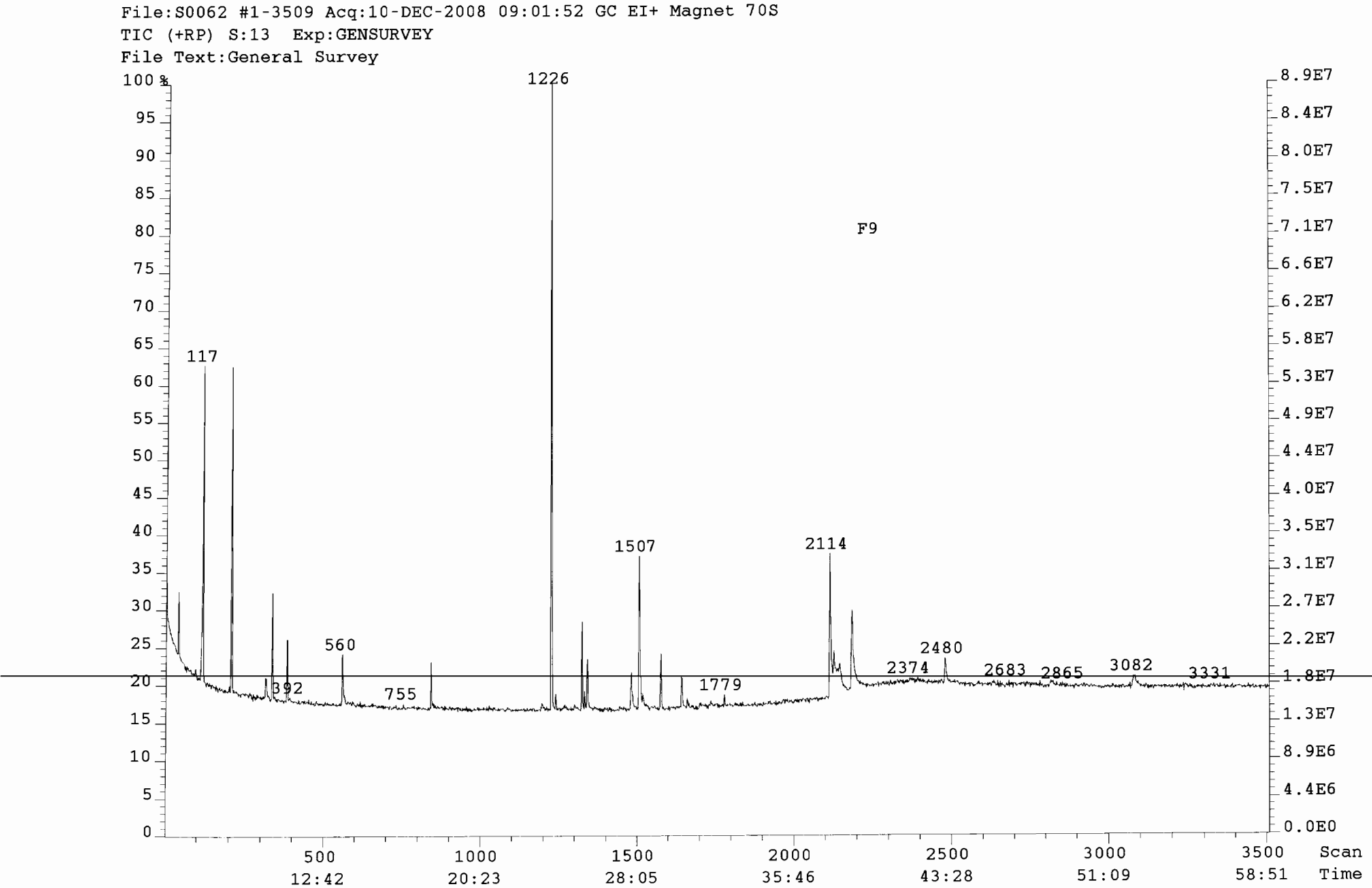
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 28/1/09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20:23
28:05
35:46
43:28
51:09
58:51
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F9	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	08-Dec-08
Client Reference:	Samples Received 08/12/08	**Data System Code:**	S0062.13	**Date Analysed:**	10-Dec-08
WRc-NSF Reference:	N22677	**Associated Blank:**	S0062.11	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0039	d_6-Benzene	P	1.35	2.0	I.S.	Internal Standard
0117	n-Heptane	P	10.52	15.6	Bz	Contaminant
0207	Toluene	P	11.28	8.1	Cl	Contaminant
0316	Diacetone alcohol	P	0.82	0.6	Cl	Contaminant
0337	d_5-Chlorobenzene	P	2.79	2.0	I.S.	Internal Standard
0384	d_{10}-p-Xylene	P	1.56	1.0	I.S.	Internal Standard
0560	d_5-Phenol	P	2.46	8.0	I.S.	Internal Standard
0843	d_8-Naphthalene	P	1.49	1.0	I.S.	Internal Standard
1226	d_{20}-BHT	P	18.27	8.0	I.S.	Internal Standard
1240	BHT	P	0.44	0.2	BHT	Test Material
1324	d_{34}-Hexadecane	P	2.66	1.0	I.S.	Internal Standard
1332	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.43	0.2	BHT	Contaminant
1341	Unknown 173, 55, 99, 84	U	1.91	0.8	BHT	Contaminant
1481	N-Butylbenzenesulphonamide	P	1.96	0.9	BHT	Test Material
1507	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.08	2.0	I.S.	Int. Std. + Contaminant
1518	Tris-(chloropropyl)phosphate isomer	T	0.41	0.2	BHT	Contaminant
1577	Di-isobutyl phthalate	P	1.99	0.9	BHT	Contaminant
1643	2-Phenyltridecane	P	1.14	0.5	BHT	Contaminant
1779	Unknown 71, 42, 41, 43	U	0.47	0.2	BHT	Test Material
2114	Di-(2-ethylhexyl) phthalate	P	11.35	11.9	Sq	Contaminant
2123-2165	Unknown 42, 71, 41, 72	U	8.26	8.7	Sq	Test Material
2184	d_{62}-Squalane	P	7.61	8.0	I.S.	Internal Standard
2480	Unknown 42, 41, 71, 43	U	1.76	1.9	Sq	Test Material
3082	Unknown 42, 41, 71, 39	U	1.51	1.6	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

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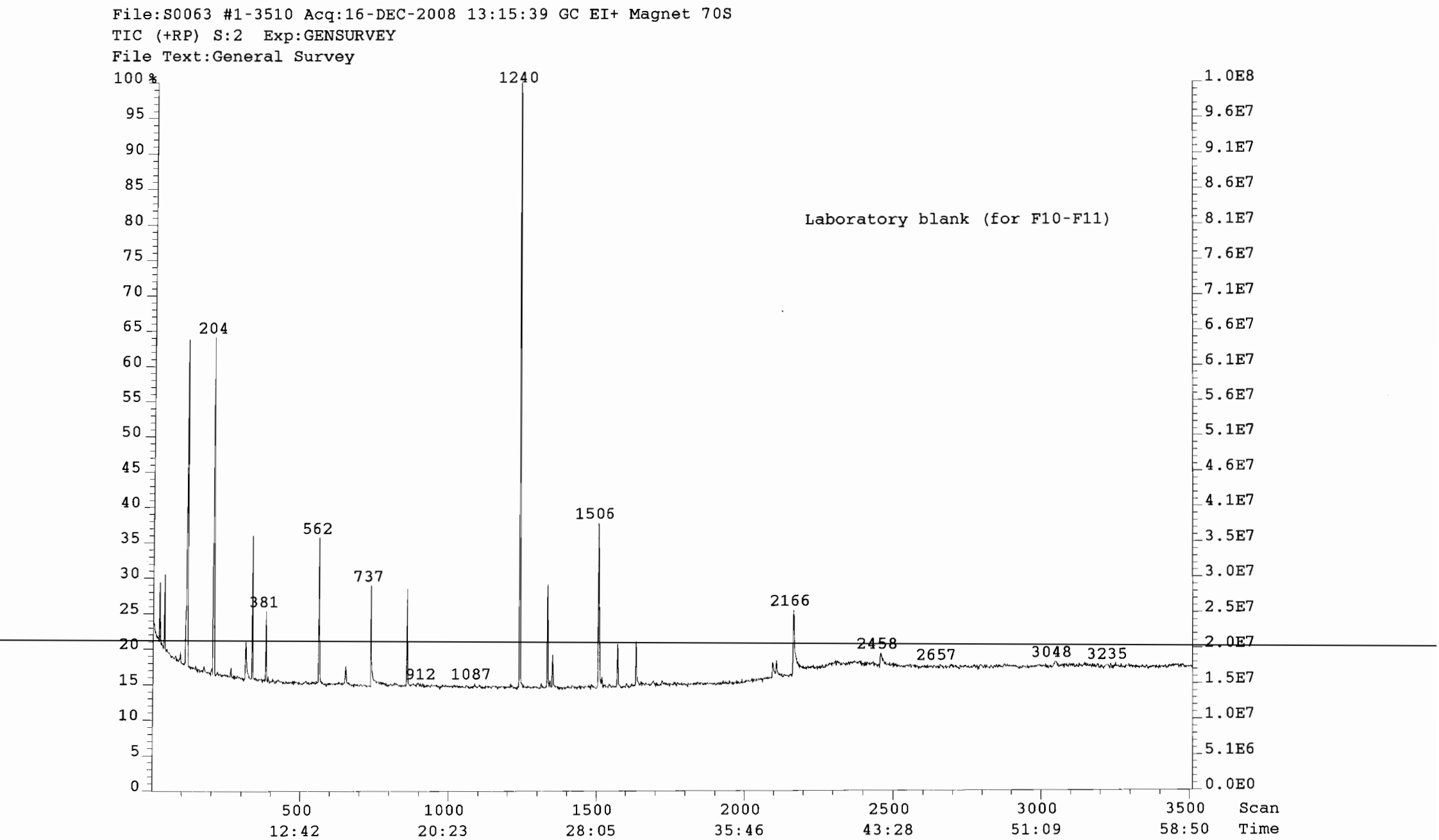
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 22/1/09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File Text:General Survey
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737
381
1506
2166
2458
2657
3048
3235
912
1087
100 %
95
90
85
80
75
70
65
60
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40
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20
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10
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1.0E8
9.6E7
9.1E7
8.6E7
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6.6E7
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20:23
1500
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2000
35:46
2500
43:28
3000
51:09
3500
58:50
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	11-Dec-08
Client Reference:	Samples Received 11/12/08	**Data System Code:**	S0063.2	**Date Analysed:**	16-Dec-08
WRc-NSF Reference:	N22679	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0021	2-Methyl-1,3-dioxolane	T	1.53	1.5	Bz	Contaminant
0037	d_6-Benzene	P	2.07	2.0	I.S.	Internal Standard
0115	n-Heptane	P	15.83	15.3	Bz	Contaminant
0204	Toluene	P	14.18	6.3	Cl	Contaminant
0312	Diacetone alcohol	P	2.39	1.1	Cl	Contaminant
0334	d_5-Chlorobenzene	P	4.52	2.0	I.S.	Internal Standard
0381	d_{10}-p-Xylene	P	2.76	1.0	I.S.	Internal Standard
0562	d_5-Phenol	P	3.53	8.0	I.S.	Internal Standard
0652	2-Ethylhexanol	P	0.89	0.4	Cl	Contaminant
0737	Silicon grease	T	4.18	1.8	Cl	Contaminant
0859	d_8-Naphthalene	P	3.24	1.0	I.S.	Internal Standard
1240	d_{20}-BHT	P	22.72	8.0	I.S.	Internal Standard
1334	d_{34}-Hexadecane	P	3.67	1.0	I.S.	Internal Standard
1342	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.17	0.1	BHT	Contaminant
1351	Unknown 173, 55, 99, 84	U	1.19	0.4	BHT	Contaminant
1506	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.63	2.0	I.S.	Int. Std. + Contaminant
1517	Tris-(chloropropyl)phosphate isomer	T	0.28	0.1	BHT	Contaminant
1572	Di-isobutyl phthalate	P	1.42	0.5	BHT	Contaminant
1635	2-Phenyltridecane	T	2.00	0.7	BHT	Contaminant
2096	Di-(2-ethylhexyl) phthalate	P	1.07	1.1	Sq	Contaminant
2108	Unknown 42, 71, 41, 43	U	0.76	0.8	Sq	Contaminant
2166	d_{62}-Squalane	P	7.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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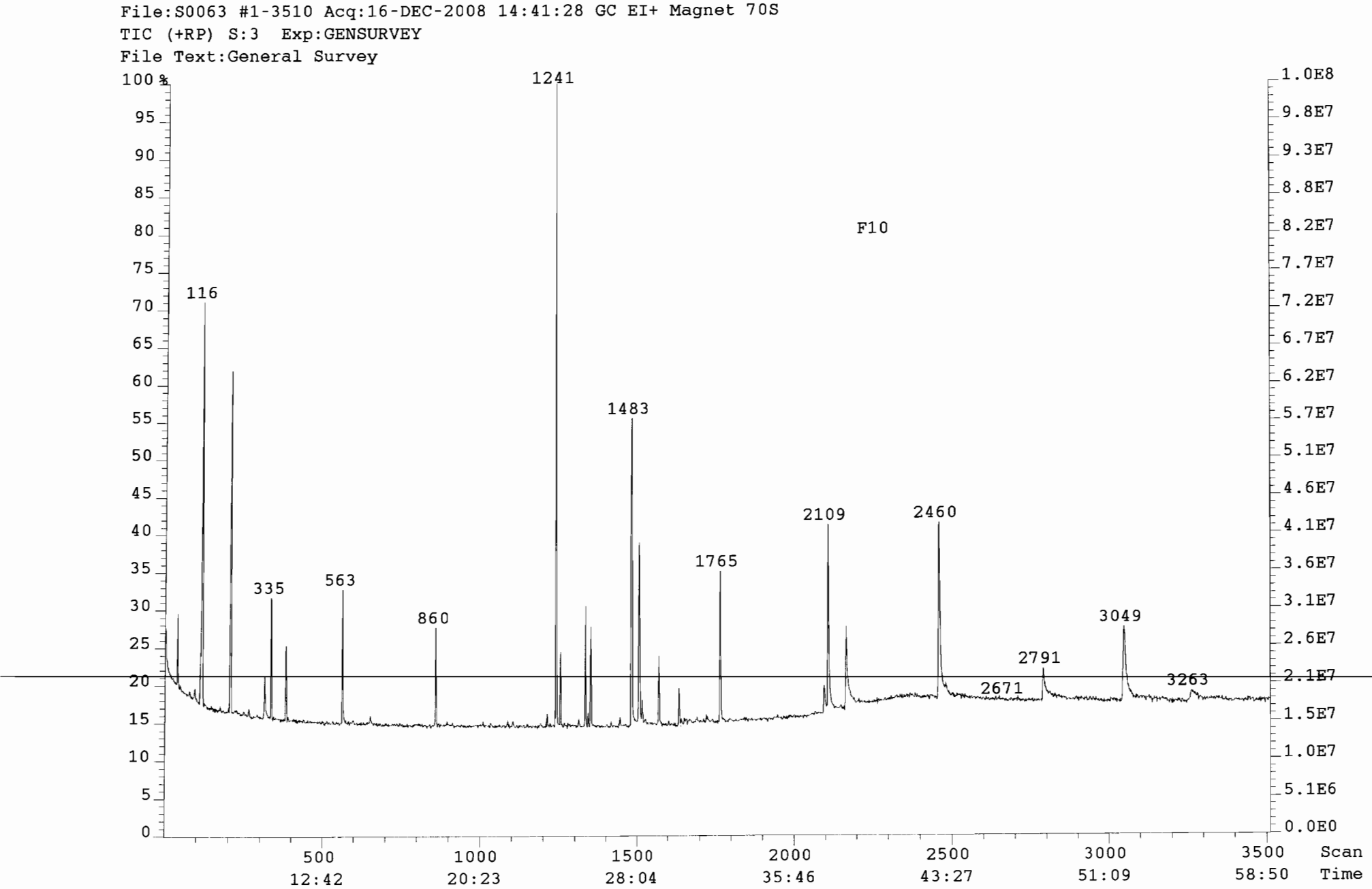
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 10/12/09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3049
3263
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12:42
20:23
28:04
35:46
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51:09
58:50

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F10	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	11-Dec-08
Client Reference:	Samples Received 11/12/08	**Data System Code:**	S0063.3	**Date Analysed:**	16-Dec-08
WRc-NSF Reference:	N22679	**Associated Blank:**	S0063.2	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0039	d_6-Benzene	P	2.20	2.0	I.S.	Internal Standard
0094	1,4-Dioxane	P	0.31	0.3	Bz	Contaminant
0116	n-Heptane	P	17.64	16.0	Bz	Contaminant
0206	Toluene	P	13.72	6.4	Cl	Contaminant
0313	Diacetone alcohol	P	2.24	1.0	Cl	Contaminant
0335	d_5-Chlorobenzene	P	4.31	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	2.48	1.0	I.S.	Internal Standard
0563	d_5-Phenol	P	5.22	8.0	I.S.	Internal Standard
0652	2-Ethylhexanol	P	0.46	0.2	Cl	Contaminant
0860	d_8-Naphthalene	P	2.92	1.0	I.S.	Internal Standard
1213	2,6-Di-t-butyl-4-methylene-2,5-cyclohexadien-1one	T	0.38	0.1	BHT	Test Material
1240	d_{20}-BHT	P	21.27	8.0	I.S.	Internal Standard
1255	BHT	P	2.34	0.9	BHT	Test Material
1312	Diethyl phthalate	P	0.28	0.1	BHT	Contaminant
1334	d_{34}-Hexadecane	P	3.87	1.0	I.S.	Internal Standard
1343	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.43	0.2	BHT	Contaminant
1351	Unknown 173, 55, 99, 84	U	3.36	1.3	BHT	Contaminant
1483	N-Butylbenzenesulphonamide	P	15.16	5.7	BHT	Test Material
1507	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	9.88	2.0	I.S.	Int. Std. + Contaminant
1516	Tris-(chloropropyl)phosphate isomer	T	0.86	0.3	BHT	Contaminant
1572	Di-isobutyl phthalate	P	2.38	0.9	BHT	Contaminant
1635	2-Phenyltridecane	T	1.39	0.5	BHT	Contaminant
1765	Unknown 71, 42, 55, 73 (M^+ 288)	U	5.74	2.2	BHT	Test Material
2096	Di-(2-ethylhexyl) phthalate	P	1.90	1.7	Sq	Contaminant
2109	Unknown 71, 42, 43, 55 (M^+ 360)	U	10.57	9.6	Sq	Test Material
2167	d_{62}-Squalane	P	8.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F10	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	11-Dec-08
Client Reference:	Samples Received 11/12/08	**Data System Code:**	S0063.3	**Date Analysed:**	16-Dec-08
WRc-NSF Reference:	N22679	**Associated Blank:**	S0063.2	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2460	Unknown 42, 71, 41, 72 (M^+ 432)	U	17.69	16.1	Sq	Test Material
2791	Unknown 57, 45, 101, 41	U	6.55	6.0	Sq	Test Material
3049	Unknown 42, 71, 41, 39 (M^+ 504)	U	12.79	11.7	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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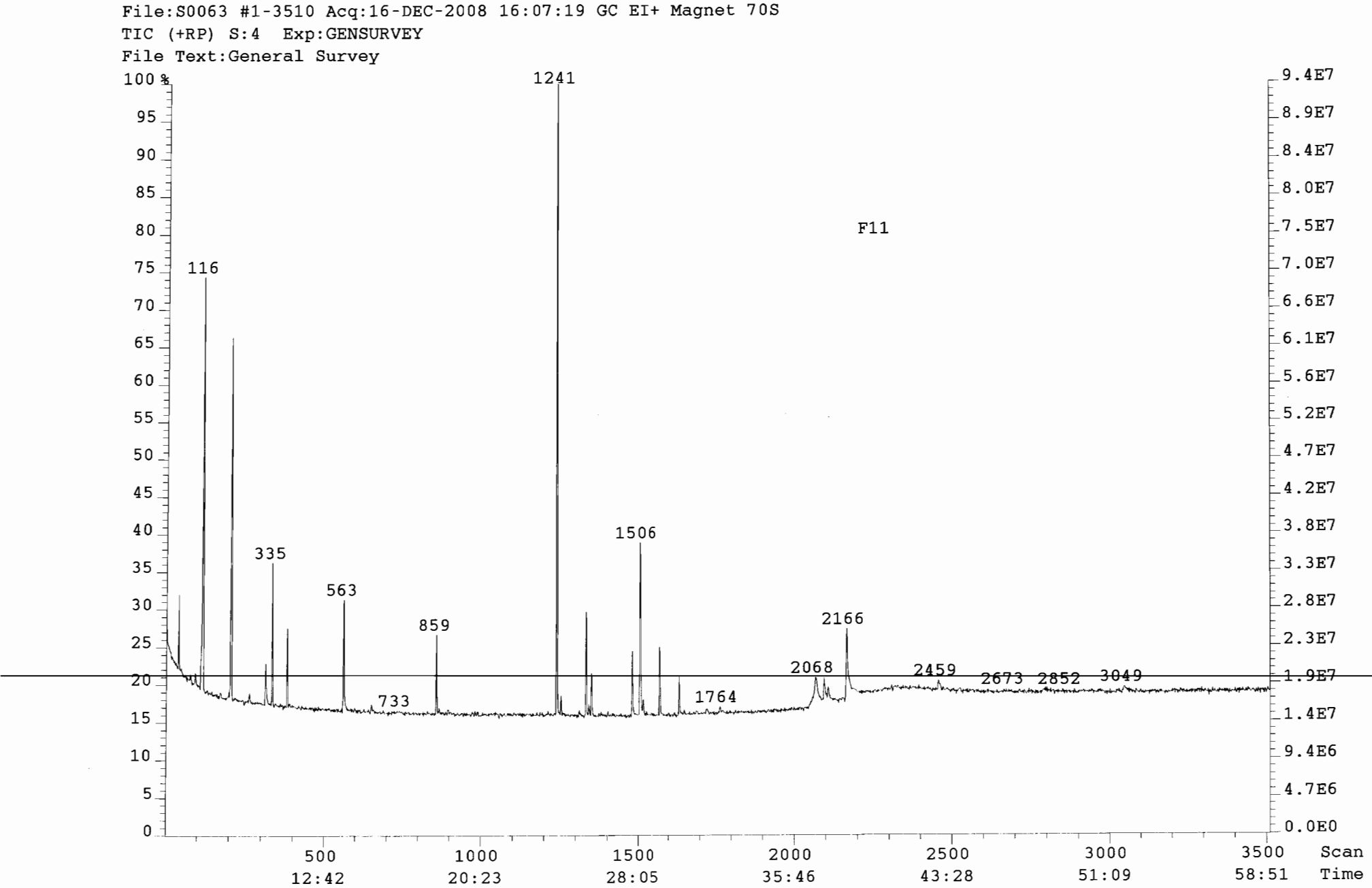
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 10/2/09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File Text:General Survey
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43:28
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3500
58:51
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F11	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	11-Dec-08
Client Reference:	Samples Received 11/12/08	**Data System Code:**	S0063.4	**Date Analysed:**	16-Dec-08
WRc-NSF Reference:	N22679	**Associated Blank:**	S0063.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0038	d_6-Benzene	P	1.81	2.0	I.S.	Internal Standard
0116	n-Heptane	P	15.10	16.7	Bz	Contaminant
0205	Toluene	P	11.76	6.5	Cl	Contaminant
0313	Diacetone alcohol	P	2.08	1.2	Cl	Contaminant
0335	d_5-Chlorobenzene	P	3.61	2.0	I.S.	Internal Standard
0382	d_{10}-p-Xylene	P	2.03	1.0	I.S.	Internal Standard
0563	d_5-Phenol	P	4.26	8.0	I.S.	Internal Standard
0651	2-Ethylhexanol	P	0.26	0.1	Cl	Test Material
0843	d_8-Naphthalene	P	2.49	1.0	I.S.	Internal Standard
1241	d_{20}-BHT	P	19.36	8.0	I.S.	Internal Standard
1254	BHT	P	0.49	0.2	BHT	Test Material
1333	d_{34}-Hexadecane	P	3.01	1.0	I.S.	Internal Standard
1342	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.36	0.1	BHT	Contaminant
1350	Unknown 173, 55, 99, 84	U	1.44	0.6	BHT	Contaminant
1481	N-Butylbenzenesulphonamide	P	2.35	1.0	BHT	Test Material
1506	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.02	2.0	I.S.	Int. Std. + Contaminant
1516	Tris-(chloropropyl)phosphate isomer	T	0.54	0.2	BHT	Contaminant
1571	Di-isobutyl phthalate	P	2.29	0.9	BHT	Contaminant
1634	2-Phenyltridecane	P	1.53	0.6	BHT	Contaminant
1779	Unknown 71, 42, 41, 43	U	0.47	0.2	BHT	Test Material
2068	Unknown 42, 41, 71, 39	U	3.83	1.6	Sq	Test Material
2095	Di-(2-ethylhexyl) phthalate	P	1.27	1.4	Sq	Contaminant
2108	Unknown 42, 71, 41, 72	U	0.74	0.8	Sq	Test Material
2166	d_{62}-Squalane	P	7.01	8.0	I.S.	Internal Standard
2480	Unknown 42, 41, 71, 43	U	1.76	2.0	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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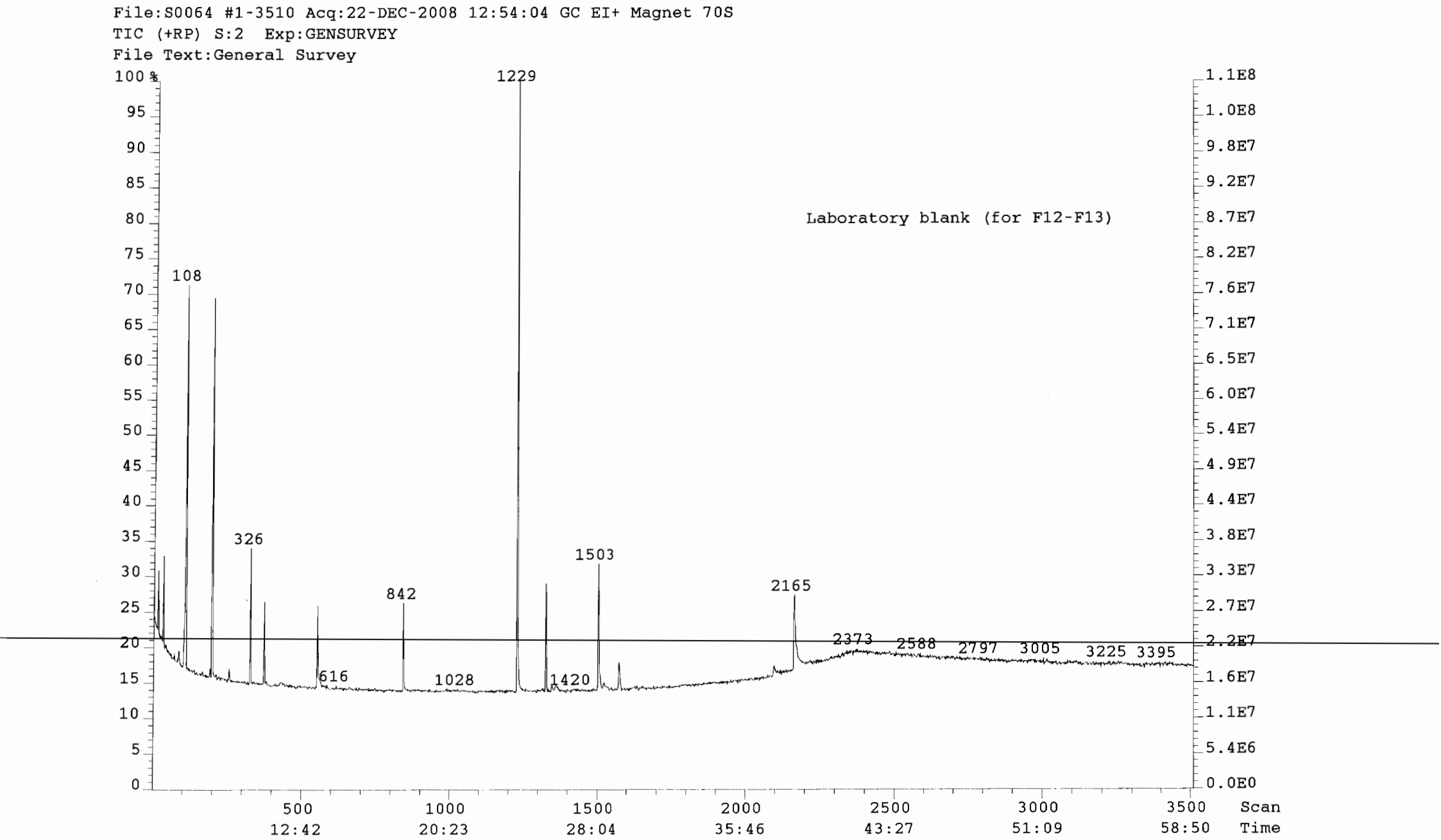
Reported By: A. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 10/2/09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File Text:General Survey
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	16-Dec-08
Client Reference:	Samples Received 16/12/08	**Data System Code:**	S0064.2	**Date Analysed:**	22-Dec-08
WRc-NSF Reference:	N22683	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0014	2-Methyl-1,3-dioxolane	T	1.61	1.5	Bz	Contaminant
0031	d_6-Benzene	P	2.18	2.0	I.S.	Internal Standard
0086	Unknown 43, 70, 71, 55	U	0.55	0.5	Bz	Contaminant
0108	n-Heptane	P	17.69	16.2	Bz	Contaminant
0191	C_8H_{18} isomer	T	0.31	0.3	Bz	Contaminant
0197	Toluene	P	13.85	6.3	Cl	Contaminant
0255	C_9H_{20} isomer	T	0.28	0.1	Cl	Contaminant
0326	d_5-Chlorobenzene	P	4.42	2.0	I.S.	Internal Standard
0373	d_{10}-p-Xylene	P	2.64	1.0	I.S.	Internal Standard
0552	d_5-Phenol	P	5.06	8.0	I.S.	Internal Standard
0842	d_8-Naphthalene	P	3.36	1.0	I.S.	Internal Standard
1229	d_{20}-BHT	P	25.75	8.0	I.S.	Internal Standard
1326	d_{34}-Hexadecane	P	4.26	1.0	I.S.	Internal Standard
1346	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.98	0.3	BHT	Contaminant
1360	Unknown 173, 55, 99, 84	U	1.53	0.5	BHT	Contaminant
1503	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.76	2.0	I.S.	Int. Std. + Contaminant
1522	Tris-(chloropropyl)phosphate isomer	T	0.59	0.2	BHT	Contaminant
1575	Di-isobutyl phthalate	P	2.11	0.7	BHT	Contaminant
2097	Di-(2-ethylhexyl) phthalate	P	1.07	1.1	Sq	Contaminant
2165	d_{62}-Squalane	P	7.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

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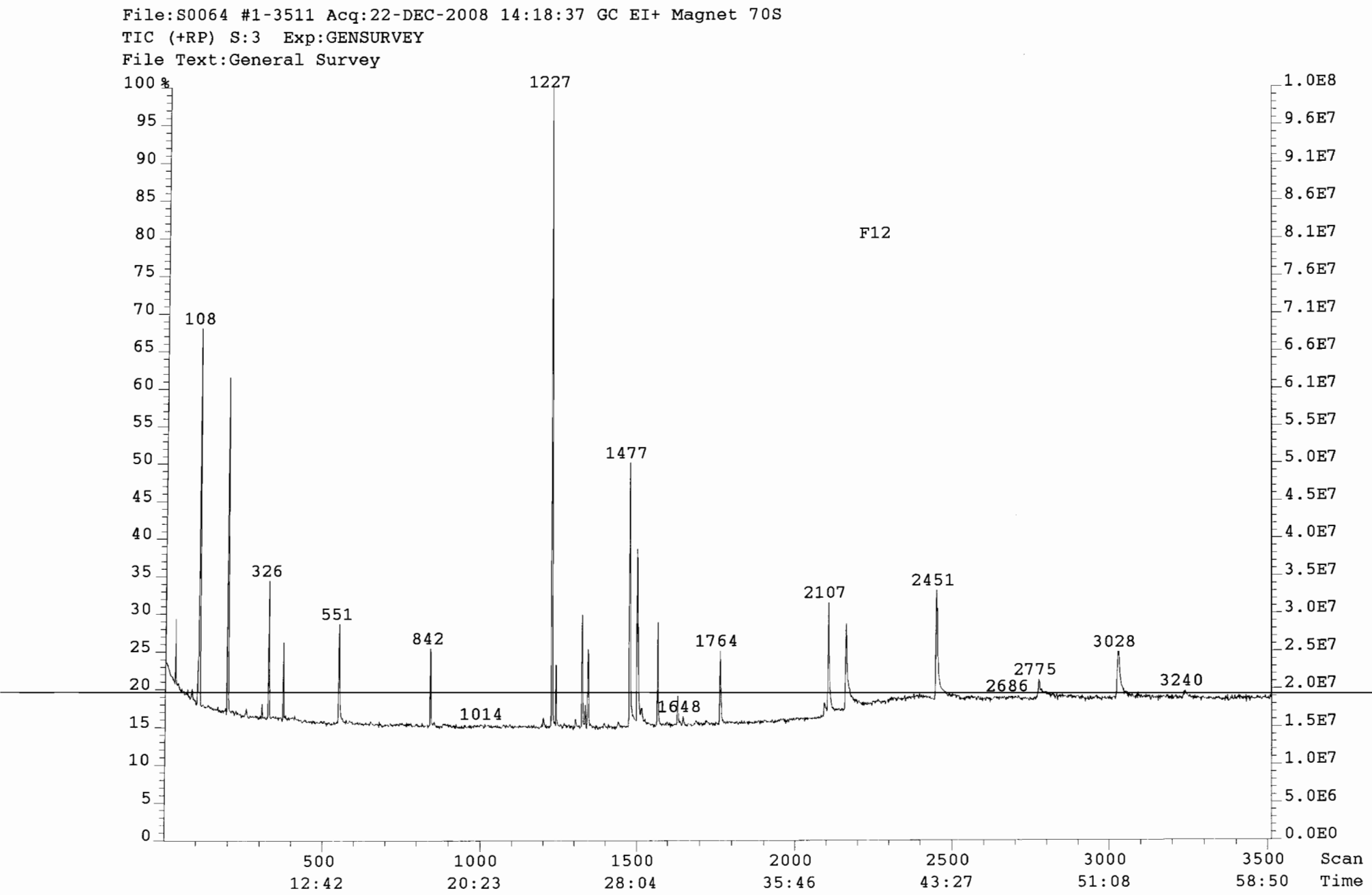
Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 11/2/09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1764
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3240
100 %
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80
75
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1.0E8
9.6E7
9.1E7
8.6E7
8.1E7
7.6E7
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20:23
1500
28:04
2000
35:46
2500
43:27
3000
51:08
3500
58:50
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F12	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	16-Dec-08
Client Reference:	Samples Received 16/12/08	**Data System Code:**	S0064.3	**Date Analysed:**	22-Dec-08
WRc-NSF Reference:	N22683	**Associated Blank:**	S0064.2	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0031	d_6-Benzene	P	1.73	2.0	I.S.	Internal Standard
0086	C_8H_{18} isomer	T	0.38	0.4	Bz	Contaminant
0108	n-Heptane	P	15.22	17.6	Bz	Contaminant
0197	Toluene	P	13.77	7.0	Cl	Contaminant
0255	C_9H_{20} isomer	T	0.26	0.1	Cl	Contaminant
0305	Diacetone alcohol	P	0.39	0.2	Cl	Contaminant
0326	d_5-Chlorobenzene	P	3.95	2.0	I.S.	Internal Standard
0373	d_{10}.p-Xylene	P	2.25	1.0	I.S.	Internal Standard
0551	d_5-Phenol	P	4.68	8.0	I.S.	Internal Standard
0842	d_8-Naphthalene	P	2.79	1.0	I.S.	Internal Standard
1200	2,6-Di-t-butyl-4-methylene-2,5-cyclohexadien-1one	T	0.33	0.1	BHT	Test Material
1227	d_{20}-BHT	P	23.75	8.0	I.S.	Internal Standard
1241	BHT	P	1.90	0.6	BHT	Test Material
1303	Diethyl phthalate	P	0.37	0.1	BHT	Contaminant
1324	d_{34}-Hexadecane	P	3.71	1.0	I.S.	Internal Standard
1334	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.62	0.2	BHT	Contaminant
1343	Unknown 173, 55, 99, 84	U	3.39	1.1	BHT	Contaminant
1477	N-Butylbenzenesulphonamide	P	13.34	4.5	BHT	Test Material
1501	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	11.10	2.0	I.S.	Int. Std. + Contaminant
1514	Tris-(chloropropyl)phosphate isomer	T	0.59	0.2	BHT	Contaminant
1568	Di-isobutyl phthalate	P	3.66	1.2	BHT	Contaminant
1631	2-Phenyltridecane	T	1.06	0.4	BHT	Contaminant
2094	Di-(2-ethylhexyl) phthalate	P	1.16	0.9	Sq	Contaminant
2107	Unknown 71, 42, 43, 55 (M^+ 360)	U	7.40	5.6	Sq	Test Material
2164	d_{62}-Squalane	P	10.61	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F12	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	16-Dec-08
Client Reference:	Samples Received 16/12/08	**Data System Code:**	S0064.3	**Date Analysed:**	22-Dec-08
WRc-NSF Reference:	N22683	**Associated Blank:**	S0064.2	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2451	Unknown 42, 71, 41, 72 (M^+ 432)	U	10.85	8.2	Sq	Test Material
2775	Unknown 57, 45, 101, 155	U	3.32	2.5	Sq	Test Material
3028	Unknown 42, 71, 41, 39 (M^+ 504)	U	7.82	5.9	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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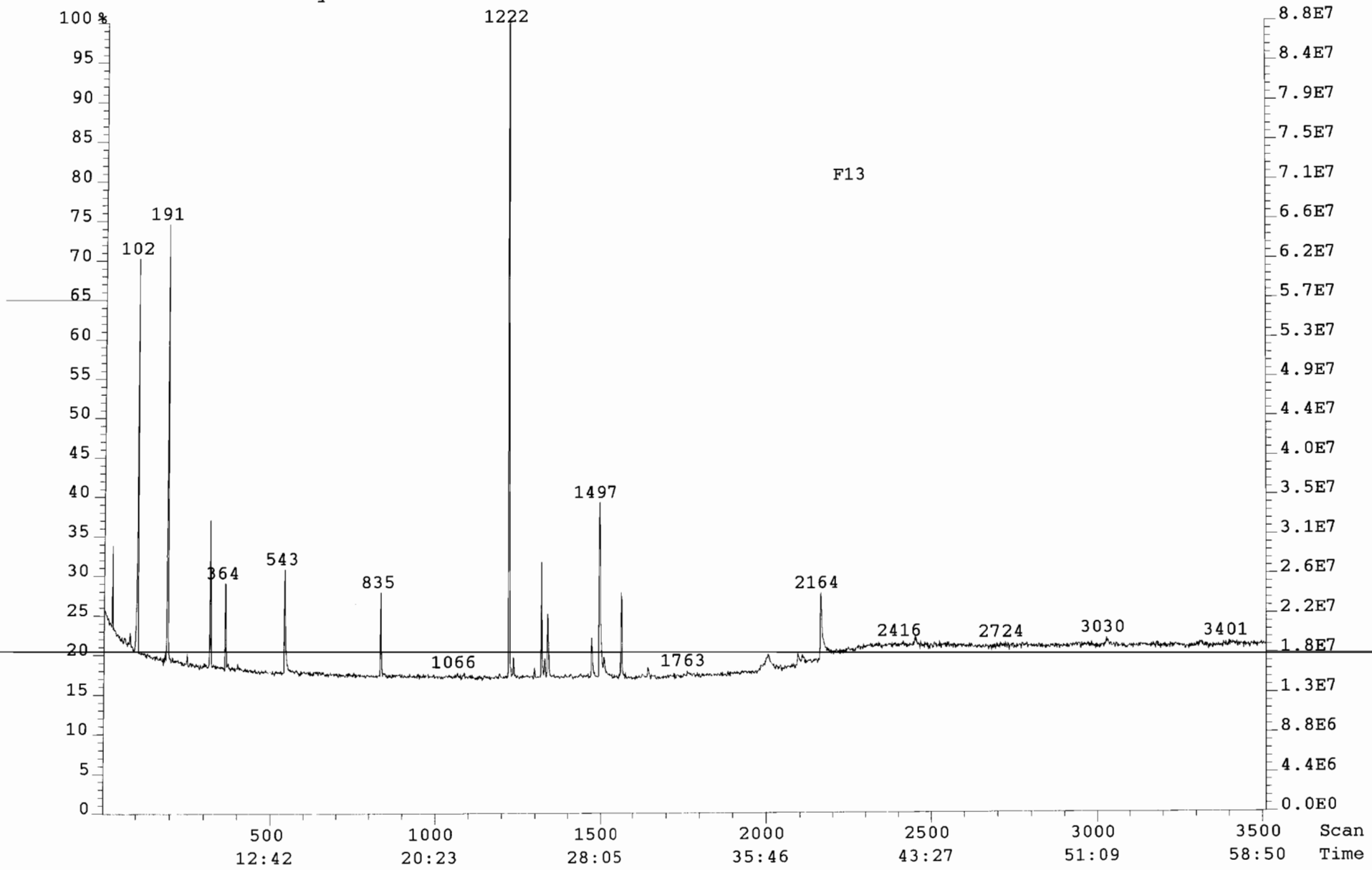
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 11/2/09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TIC (+RP) S:4 Exp:GENSURVEY
File Text:General Survey
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102
F13
1497
364
543
835
2164
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3030
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5.7E7
5.3E7
4.9E7
4.4E7
4.0E7
3.5E7
3.1E7
2.6E7
2.2E7
1.8E7
1.3E7
8.8E6
4.4E6
0.0E0
500
12:42
1000
20:23
1500
28:05
2000
35:46
2500
43:27
3000
51:09
3500
58:50
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F13	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	16-Dec-08
Client Reference:	Samples Received 16/12/08	**Data System Code:**	S0064.4	**Date Analysed:**	22-Dec-08
WRc-NSF Reference:	N22683	**Associated Blank:**	S0064.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0024	d_6-Benzene	P	1.49	2.0	I.S.	Internal Standard
0080	C_8H_{18} isomer	T	0.34	0.5	Bz	Contaminant
0102	n-Heptane	P	11.76	15.8	Bz	Contaminant
0191	Toluene	P	11.20	5.9	Cl	Contaminant
0249	C_9H_{20} isomer	T	0.33	0.2	Cl	Contaminant
0318	d_5-Chlorobenzene	P	3.78	2.0	I.S.	Internal Standard
0364	d_{10}-p-Xylene	P	2.37	1.0	I.S.	Internal Standard
0543	d_5-Phenol	P	4.13	8.0	I.S.	Internal Standard
0835	d_8-Naphthalene	P	2.48	1.0	I.S.	Internal Standard
1222	d_{20}-BHT	P	21.42	8.0	I.S.	Internal Standard
1235	BHT	P	0.52	0.2	BHT	Test Material
1298	Diethyl phthalate	P	0.32	0.1	BHT	Contaminant
1319	d_{34}-Hexadecane	P	3.28	1.0	I.S.	Internal Standard
1329	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.58	0.2	BHT	Contaminant
1338	Unknown 173, 55, 99, 84	U	2.62	1.0	BHT	Contaminant
1472	N-Butylbenzenesulphonamide	P	1.88	0.7	BHT	Test Material
1497	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	10.44	2.0	I.S.	Int. Std. + Contaminant
1510	Tris-(chloropropyl)phosphate isomer	T	0.63	0.2	BHT	Contaminant
1565	Di-isobutyl phthalate	P	2.91	1.1	BHT	Contaminant
2005	Unknown 42, 71, 41, 72	U	3.44	1.3	Sq	Test Material
2094	Di-(2-ethylhexyl) phthalate	P	1.27	1.4	Sq	Contaminant
2164	d_{62}-Squalane	P	7.01	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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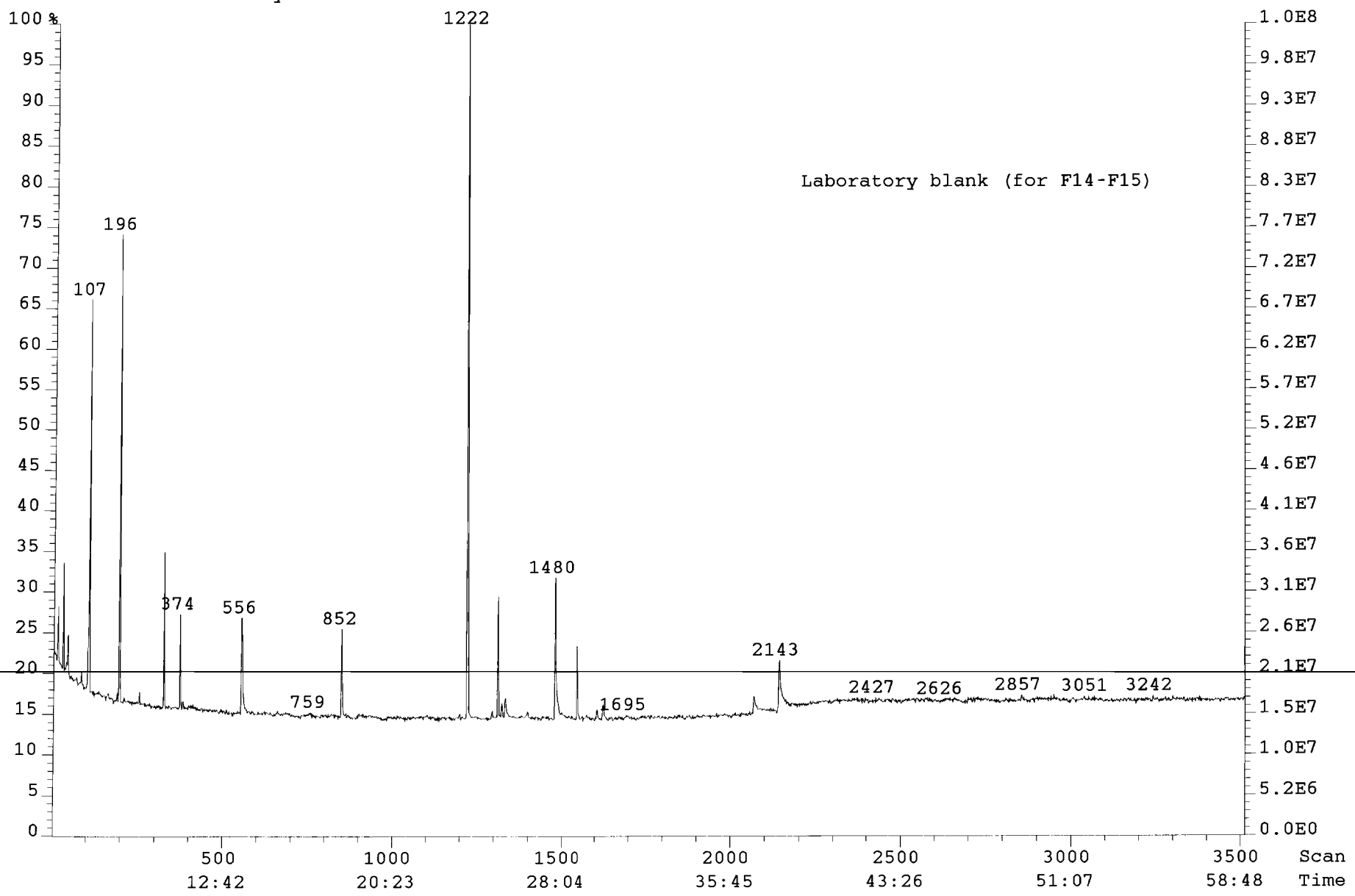
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 11/2/09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File Text:General Survey
Laboratory blank (for F14-F15)
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852
759
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1695
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3242
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58:48
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	30-Dec-08
Client Reference:	Samples Received 30/12/08	**Data System Code:**	S0066.2	**Date Analysed:**	20-Jan-09
WRc-NSF Reference:	N22688	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0012	2-Methyl-1,3-dioxolane	T	1.16	1.1	Bz	Contaminant
0028	d_6-Benzene	P	2.12	2.0	I.S.	Internal Standard
0037	Carbon tetrachloride	P	0.14	0.1	Bz	Contaminant
0042	Cyclohexane	P	1.39	1.3	Bz	Contaminant
0107	n-Heptane	P	12.87	12.1	Bz	Contaminant
0196	Toluene	P	12.52	6.1	Cl	Contaminant
0327	d_5-Chlorobenzene	P	4.09	2.0	I.S.	Internal Standard
0374	d_{10}-p-Xylene	P	2.35	1.0	I.S.	Internal Standard
0382	Xylene isomer	P	0.36	0.2	Cl	Contaminant
0556	d_5-Phenol	P	5.25	8.0	I.S.	Internal Standard
0852	d_8-Naphthalene	P	3.21	1.0	I.S.	Internal Standard
1222	d_{20}-BHT	P	21.28	8.0	I.S.	Internal Standard
1312	d_{34}-Hexadecane	P	3.33	1.0	I.S.	Internal Standard
1323	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.58	0.2	BHT	Contaminant
1334	Unknown 173, 55, 99, 84	U	1.28	0.5	BHT	Contaminant
1480	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.10	2.0	I.S.	Int. Std. + Contaminant
1546	Di-isobutyl phthalate	P	3.11	1.2	BHT	Contaminant
1607	2-Phenyltridecane	T	0.36	0.1	BHT	Contaminant
1625	Di-n-butyl phthalate	P	1.14	0.4	BHT	Contaminant
2097	Di-(2-ethylhexyl) phthalate	P	1.07	1.1	Sq	Contaminant
2165	d_{62}-Squalane	P	7.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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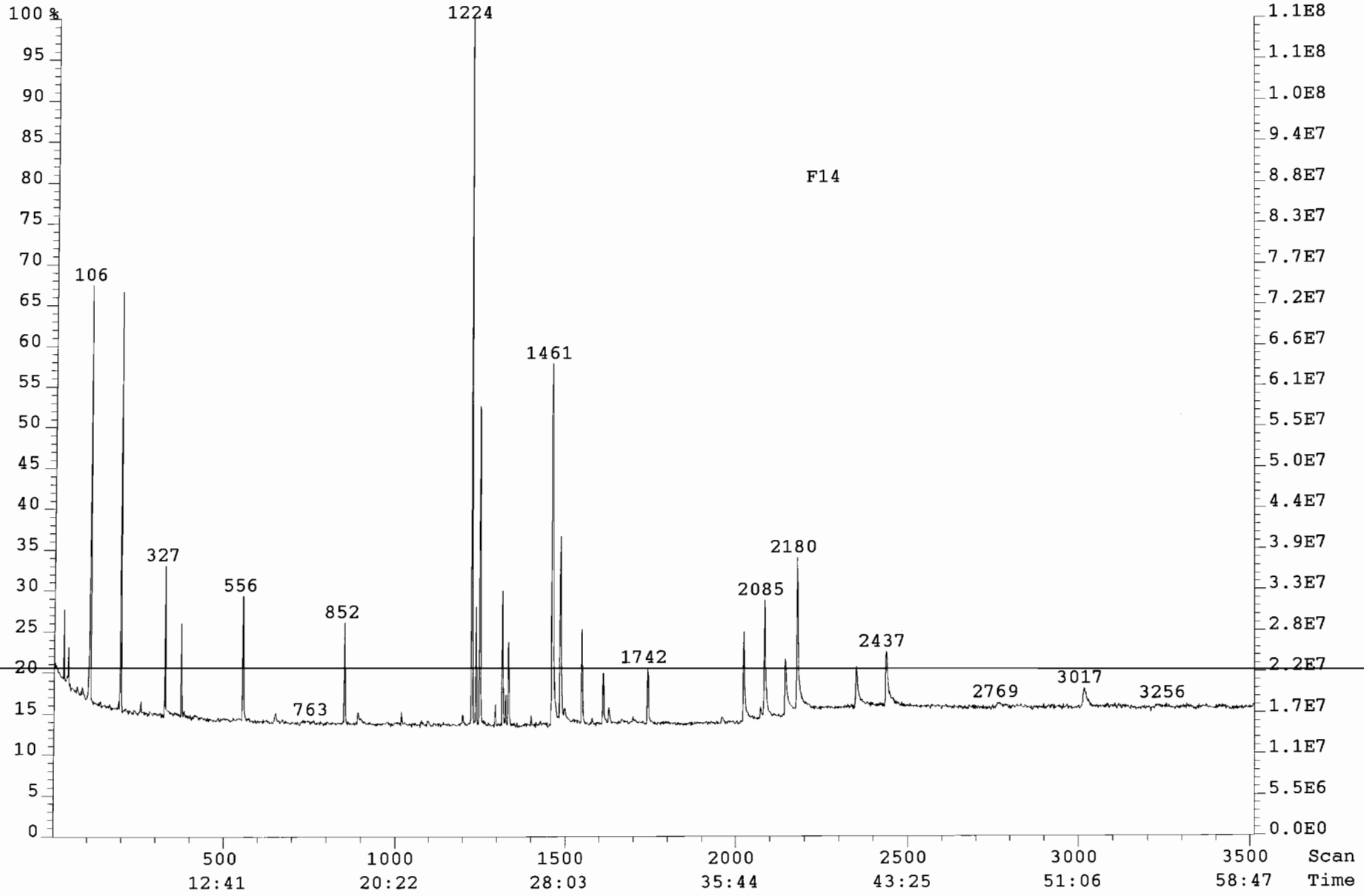
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 16/2/09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TIC (+RP) S:3 Exp:GENSURVEY
File Text:General Survey
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F14	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	30-Dec-08
Client Reference:	Samples Received 30/12/08	**Data System Code:**	S0066.3	**Date Analysed:**	20-Jan-09
WRc-NSF Reference:	N22688	**Associated Blank:**	S0066.2	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0028	d_6-Benzene	P	1.91	2.0	I.S.	Internal Standard
0042	Cyclohexane	P	1.37	1.4	Bz	Contaminant
0106	n-Heptane	P	13.18	13.8	Bz	Contaminant
0196	Toluene	P	13.17	5.7	Cl	Contaminant
0327	d_5-Chlorobenzene	P	4.63	2.0	I.S.	Internal Standard
0374	d_{10}-p-Xylene	P	2.52	1.0	I.S.	Internal Standard
0556	d_5-Phenol	P	5.41	8.0	I.S.	Internal Standard
0651	2-Ethylhexanol	P	0.61	0.3	Cl	Test Material
0852	d_8-Naphthalene	P	3.02	1.0	I.S.	Internal Standard
0891	2-Phenoxyethanol	P	0.39	0.2	Cl	Test Material
1018	Unknown 55, 84, 112, 142	U	0.49	0.2	Cl	Test Material
1198	2,6-Di-t-butyl-4-methylene-2,5-cyclohexadien-1one	T	0.34	0.1	BHT	Test Material
1224	d_{20}-BHT	P	24.54	8.0	I.S.	Internal Standard
1237	BHT	P	3.30	1.1	BHT	Test Material
1248	1,6-Dioxacyclododecane-7,12-dione	T	12.71	4.1	BHT	Test Material
1295	Diethyl phthalate	P	0.71	0.2	BHT	Contaminant
1315	d_{34}-Hexadecane	P	4.2	1.0	I.S.	Internal Standard
1324	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.83	0.3	BHT	Contaminant
1333	Unknown 173, 55, 99, 84	U	3.56	1.2	BHT	Contaminant
1461	N-Butylbenzenesulphonamide	P	24.36	7.9	BHT	Test Material
1487	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	9.94	2.0	I.S.	Int. Std. + Contaminant
1498	Tris-(chloropropyl)phosphate isomer	T	0.58	0.2	BHT	Contaminant
1550	Di-isobutyl phthalate	P	3.68	1.2	BHT	Contaminant
1611	2-Phenyltridecane	T	2.53	0.8	BHT	Contaminant
~~1628~~	~~Di-n-butyl phthalate~~	~~P~~	~~0.71~~	~~0.2~~	~~BHT~~	~~Contaminant~~
1742	Unknown 71, 42, 41, 55	U	3.04	1.0	BHT	Test Material
2025	Unknown 55, 99, 173, 113 [M* 344]	U	6.65	2.2	Sq	Test Material
2073	Di-(2-ethylhexyl) phthalate	P	0.51	0.7	Sq	Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F14	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	30-Dec-08
Client Reference:	Samples Received 30/12/08	**Data System Code:**	S0066.3	**Date Analysed:**	20-Jan-09
WRc-NSF Reference:	N22688	**Associated Blank:**	S0066.2	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2085	Unknown 42, 71, 41, 55 (M^+ 360)	U	7.12	9.7	Sq	Test Material
2145	d_{62}-Squalane	P	5.90	8.0	I.S.	Internal Standard
2180	Unknown 55, 173, 99, 42 [M^+ 372]	U	12.26	16.6	Sq	Test Material
2351	Unknown 55, 42, 41, 54 [M^+ 400]	U	4.80	6.5	Sq	Test Material
2437	Unknown 42, 71, 41, 72 (M^+ 432)	U	7.06	9.6	Sq	Test Material
3017	Unknown 42, 71, 41, 39 (M^+ 504)	U	3.55	4.8	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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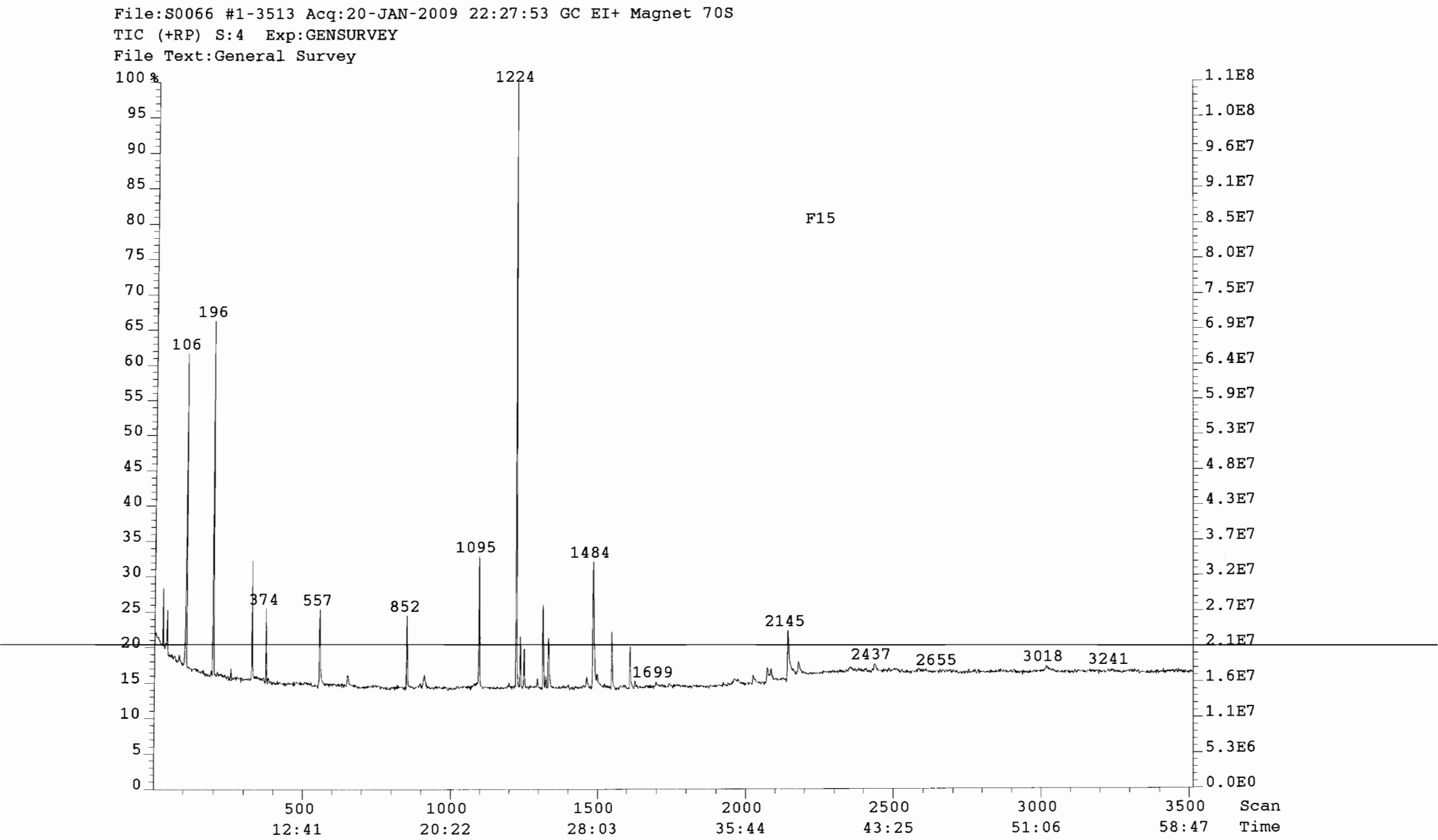
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 18/2/09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196
106
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1484
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557
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3018
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28:03
2000
35:44
2500
43:25
3000
51:06
3500
58:47
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F15	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	30-Dec-08
Client Reference:	Samples Received 30/12/08	**Data System Code:**	S0066.4	**Date Analysed:**	20-Jan-09
WRc-NSF Reference:	N22688	**Associated Blank:**	S0066.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0027	d_6-Benzene	P	1.63	2.0	I.S.	Internal Standard
0041	C_8H_{18} isomer	T	1.58	1.9	Bz	Contaminant
0106	n-Heptane	P	10.68	13.1	Bz	Contaminant
0196	Toluene	P	12.76	6.1	Cl	Contaminant
0327	d_5-Chlorobenzene	P	4.16	2.0	I.S.	Internal Standard
0374	d_{10}-p-Xylene	P	2.58	1.0	I.S.	Internal Standard
0557	d_5-Phenol	P	4.34	8.0	I.S.	Internal Standard
0652	2-Ethylhexanol	P	1.44	0.7	Cl	Test Material
0852	d_8-Naphthalene	P	3.12	1.0	I.S.	Internal Standard
0911	2-Phenoxyethanol	P	1.33	0.6	Cl	Test Material
1095	Unknown 43, 58, 41, 27	U	5.38	2.0	BHT	Test Material
1224	d_{20}-BHT	P	21.16	8.0	I.S.	Internal Standard
1237	BHT	P	1.48	0.6	BHT	Test Material
1249	1,6-Dioxacyclododecane-7,12-dione	T	1.66	0.6	BHT	Test Material
1295	Diethyl phthalate	P	0.35	0.4	BHT	Contaminant
1314	d_{34}-Hexadecane	P	3.30	3.3	I.S.	Internal Standard
1324	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.48	0.5	BHT	Contaminant
1333	Unknown 173, 55, 99, 84	U	3.37	3.4	BHT	Contaminant
1462	N-Butylbenzenesulphonamide	P	0.99	1.0	BHT	Test Material
1484	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	10.48	2.0	I.S.	Int. Std. + Contaminant
1497	Tris-(chloropropyl)phosphate isomer	T	0.46	0.2	BHT	Contaminant
1550	Di-isobutyl phthalate	P	2.55	1.0	BHT	Contaminant
1611	2-Phenyltridecane	T	2.16	0.8	Sq	Test Material
1628	Di-n-butyl phthalate	P	0.76	0.9	Sq	Test Material
2026	~~Unknown 55, 99, 173, 113 [M$^+$ 344]~~	~~U~~	~~0.89~~	~~1.1~~	~~Sq~~	~~Test Material~~
2073	Di-(2-ethylhexyl) phthalate	P	1.72	2.1	Sq	Contaminant
2086	Unknown 71, 42, 41, 73	U	1.13	1.4	Sq	Test Material
2145	d_{62}-Squalane	P	6.58	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F15	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	30-Dec-08
Client Reference:	Samples Received 30/12/08	**Data System Code:**	S0066.4	**Date Analysed:**	20-Jan-09
WRc-NSF Reference:	N22688	**Associated Blank:**	S0066.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2180	Unknown 55, 173, 99, 53 [M* 372]	U	1.23	1.5	Sq	Test Material
2437	Unknown 42, 71, 41, 55	U	0.83	1.0	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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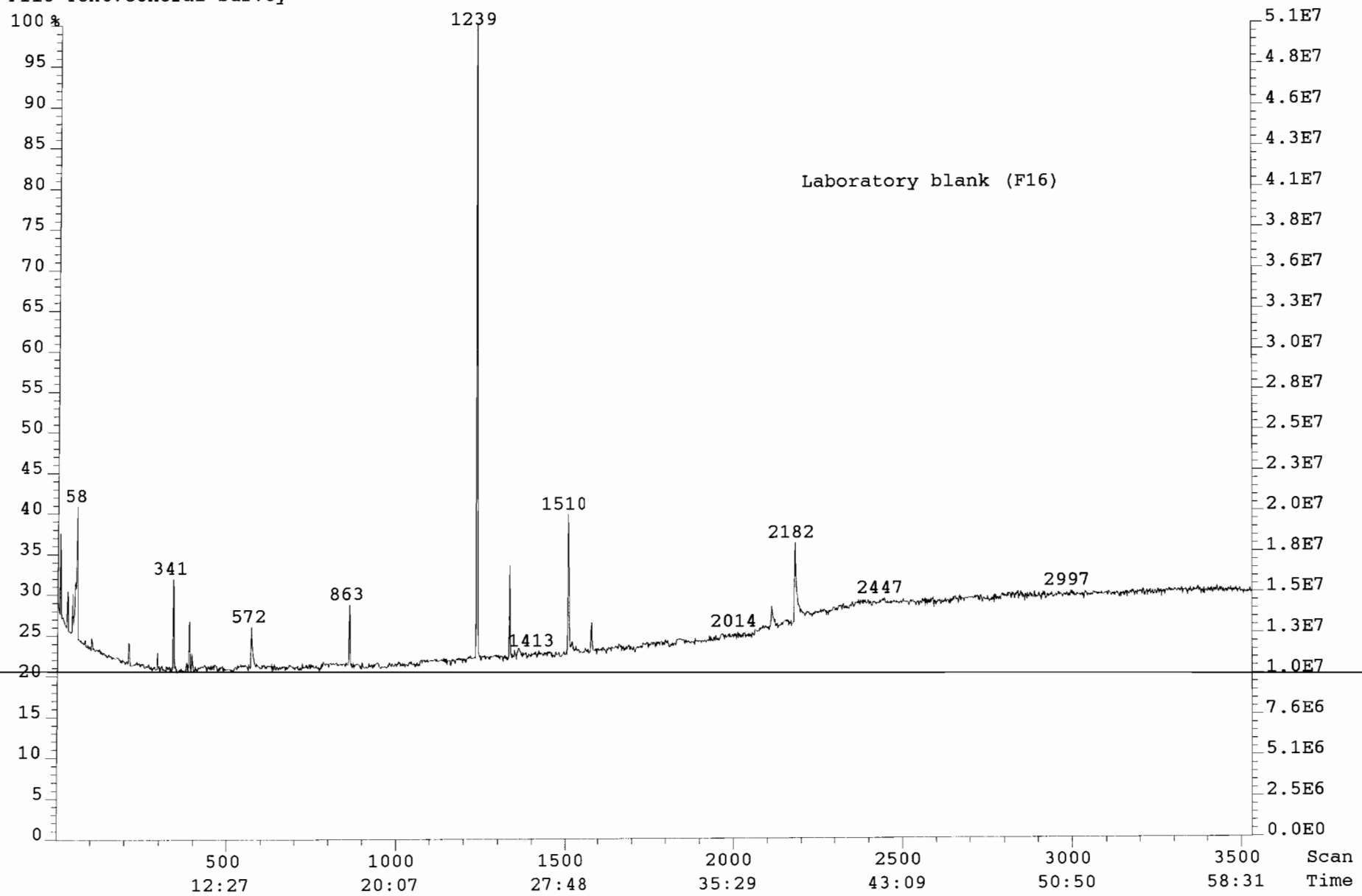
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 16/2/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	27-Jan-09
Client Reference:	Samples Received 27/01/09	**Data System Code:**	S0067.2	**Date Analysed:**	10-Feb-09
WRc-NSF Reference:	N22700	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0007	Acetone	P	0.94	3.6	Bz	Contaminant
0029	2-Methyl-1,3-dioxolane	T	0.57	2.2	Bz	Contaminant
0045	d_6-Benzene	P	0.52	2.0	I.S.	Internal Standard
0053	Carbon tetrachloride	P	3.48	13.4	Bz	Contaminant
0058	Cyclohexane	P				Contaminant
0102	1,4-Dioxane	P	0.22	0.8	Bz	Contaminant
0211	Toluene	P	0.43	0.6	Cl	Contaminant
0295	Butyl acetate	P	0.28	0.4	Cl	Contaminant
0341	d_5-Chlorobenzene	P	1.37	2.0	I.S.	Internal Standard
0381	Xylene isomer	P	0.20	0.3	Cl	Contaminant
0389	d_{10}-p-Xylene	P	0.83	1.0	I.S.	Internal Standard
0397	Xylene isomer	P	0.44	0.6	Cl	Contaminant
0572	d_5-Phenol	P	1.70	8.0	I.S.	Internal Standard
0863	d_8-Naphthalene	P	0.96	1.0	I.S.	Internal Standard
1239	d_{20}-BHT	P	10.16	8.0	I.S.	Internal Standard
1335	d_{34}-Hexadecane	P	1.42	1.0	I.S.	Internal Standard
1510	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	8.10	2.0	I.S.	Int. Std. + Contaminant
1521	Tris-(chloropropyl)phosphate isomer	T	0.14	0.1	BHT	Contaminant
1581	Di-isobutyl phthalate	P	3.11	2.4	BHT	Contaminant
2113	Di-(2-ethylhexyl) phthalate	P	1.07	1.1	Sq	Contaminant
2182	d_{62}-Squalane	P	7.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 3/3/09

File:S0067 #1-3532 Acq:10-FEB-2009 14:51:46 GC EI+ Magnet 70S
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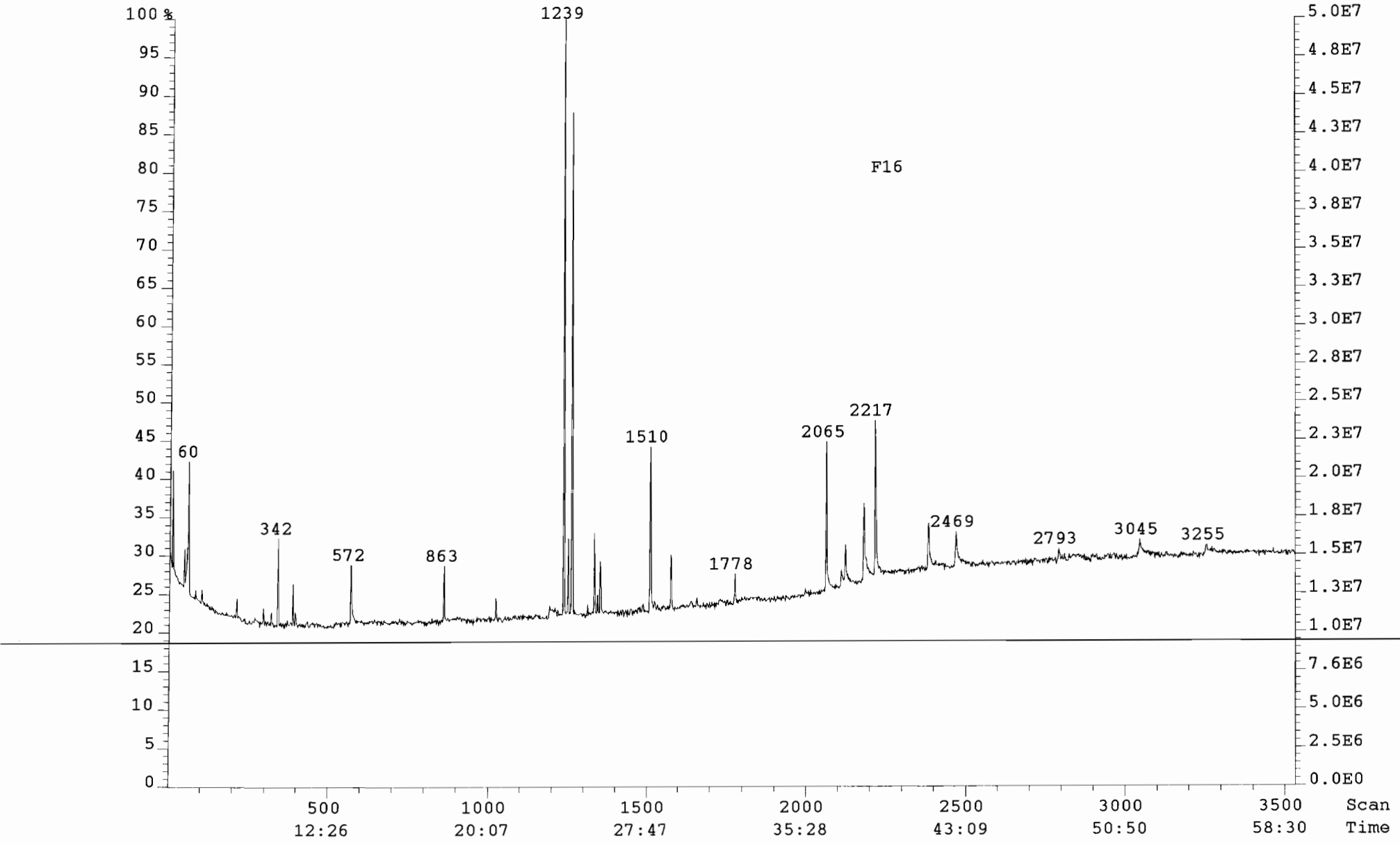

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F14	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	27-Jan-09
Client Reference:	Samples Received 27/01/09	**Data System Code:**	S0067.3	**Date Analysed:**	10-Feb-09
WRc-NSF Reference:	N22700	**Associated Blank:**	S0067.2	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0009	Acetone	P	1.30	5.2	Bz	Contaminant
0047	d_6-Benzene	P	0.50	2.0	I.S.	Internal Standard
0055	Carbon tetrachloride	P	3.26	13.0	Bz	Contaminant
0060	Cyclohexane	P				Contaminant
0103	1,4-Dioxane	P	0.15	0.6	Bz	Contaminant
0213	Toluene	P	0.26	0.4	Cl	Contaminant
0296	Butyl acetate	P	0.28	0.4	Cl	Contaminant
0321	Diacetone alcohol	P	0.18	0.2	Cl	Contaminant
0342	d_5-Chlorobenzene	P	1.45	2.0	I.S.	Internal Standard
0389	d_{10}-p-Xylene	P	0.71	1.0	I.S.	Internal Standard
0397	Xylene isomer	P	0.24	0.3	Cl	Contaminant
0572	d_5-Phenol	P	1.59	8.0	I.S.	Internal Standard
0863	d_8-Naphthalene	P	1.02	1.0	I.S.	Internal Standard
1024	Unknown 55, 84, 112, 41	U	0.30	0.2	BHT	Test Material
1239	d_{20}-BHT	P	10.07	8.0	I.S.	Internal Standard
1252	BHT	P	1.04	0.8	BHT	Test Material
1264	1,6-Dioxacyclododecane-7,12-dione	T	9.26	7.4	BHT	Test Material
1313	Diethyl phthalate	P	0.19	0.2	BHT	Contaminant
1335	d_{34}-Hexadecane	P	1.35	1.0	I.S.	Internal Standard
1344	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.28	0.2	BHT	Contaminant
1353	Unknown 173, 55, 99, 84	U	1.04	0.8	BHT	Contaminant
1510	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.10	2.0	I.S.	Int. Std. + Contaminant
1523	Tris-(chloropropyl)phosphate isomer	T	0.12	0.1	BHT	Contaminant
1578	Di-isobutyl phthalate	P	0.84	0.7	BHT	Contaminant
1778	Unknown 71, 42, 41, 55	U	0.65	0.5	BHT	Test Material
2065	Unknown 55, 173, 99, 113 [M^+ 344]	U	3.49	2.8	Sq	Test Material
2112	Di-(2-ethylhexyl) phthalate	P	0.60	1.3	Sq	Contaminant
2124	Unknown 71, 42, 41, 55 (M^+ 360)	U	1.28	2.8	Sq	Test Material
2182	d_{62}-Squalane	P	3.67	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F14	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	27-Jan-09
Client Reference:	Samples Received 27/01/09	**Data System Code:**	S0067.3	**Date Analysed:**	10-Feb-09
WRc-NSF Reference:	N22700	**Associated Blank:**	S0067.2	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2217	Unknown 55, 99, 173, 41 [M^+ 372]	U	4.58	10.0	Sq	Test Material
2384	Unknown 55, 42, 41, 54 [M^+ 400]	U	1.82	4.0	Sq	Test Material
2469	Unknown 42, 71, 41, 72 (M^+ 432)	U	1.76	3.8	Sq	Test Material
3045	Unknown 42, 71, 41, 39 (M^+ 504)	U	0.87	1.9	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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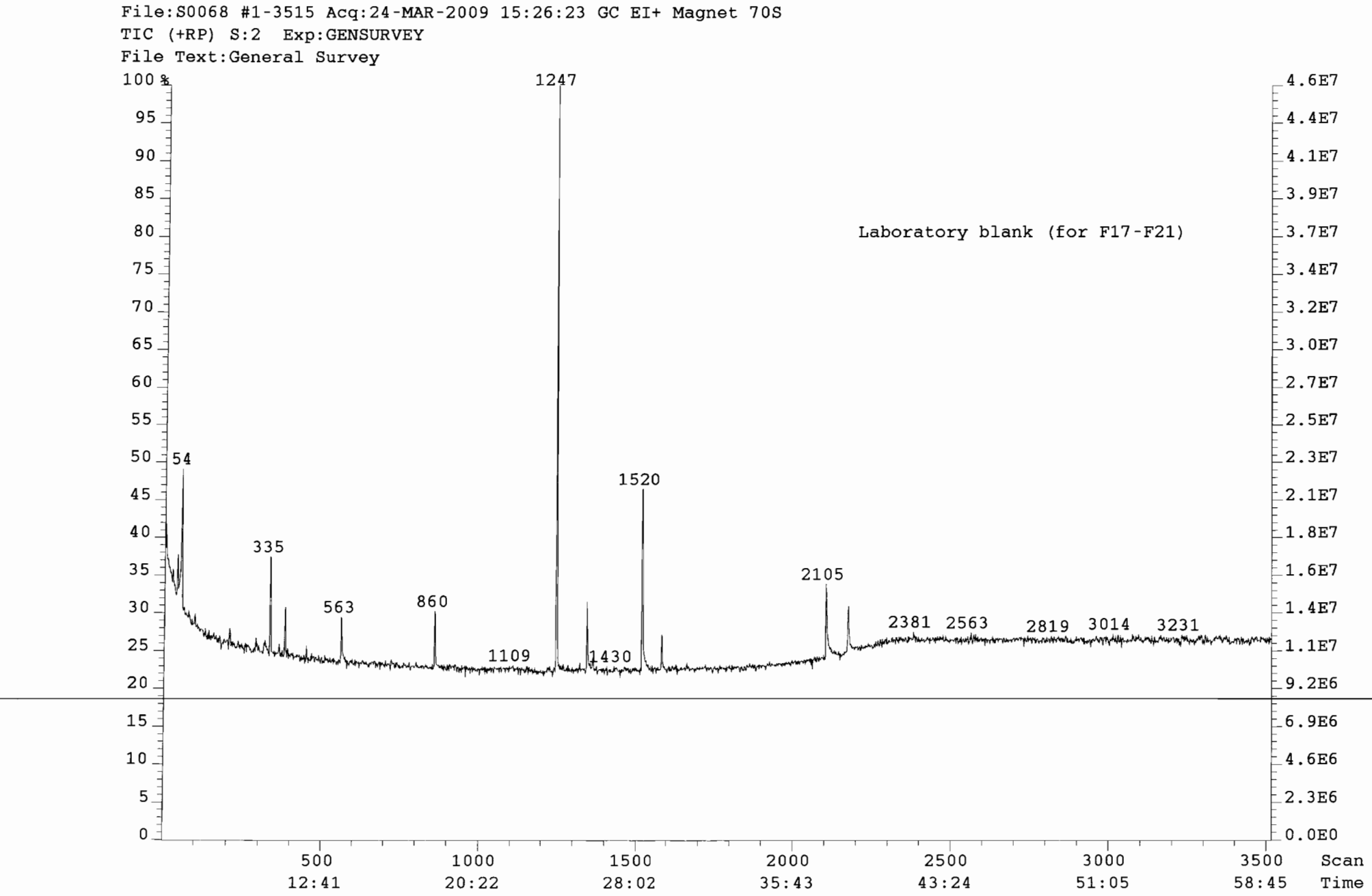
Reported By: H. A. James

Authorised By: John Dunning
J. Dunning
Laboratory Manager

Date: 3/3/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	25-Feb-09
Client Reference:	Samples Received 25/02/09	**Data System Code:**	S0068.2	**Date Analysed:**	24-Mar-09
WRc-NSF Reference:	N22713	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0040	d_6-Benzene	P	0.61	2.0	I.S.	Internal Standard
0054	Cyclohexane	P	2.52	8.26	Bz	Contaminant
0335	d_5-Chlorobenzene	P	1.67	2.0	I.S.	Internal Standard
0389	d_{10}-p-Xylene	P	0.74	1.0	I.S.	Internal Standard
0563	d_5-Phenol	P	1.25	8.0	I.S.	Internal Standard
0860	d_8-Naphthalene	P	1.04	1.0	I.S.	Internal Standard
1247	d_{20}-BHT	P	9.72	8.0	I.S.	Internal Standard
1344	d_{34}-Hexadecane	P	1.30	1.0	I.S.	Internal Standard
1363	Unknown 173, 55, 99, 84	U	0.25	0.2	BHT	Contaminant
1520	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.60	2.0	I.S.	Int. Std. + Contaminant
1584	Di-isobutyl phthalate	P	0.73	0.6	BHT	Contaminant
2105	Di-(2-ethylhexyl) phthalate	P	2.53	14.9	Sq	Contaminant
2175	d_{62}-Squalane	P	1.36	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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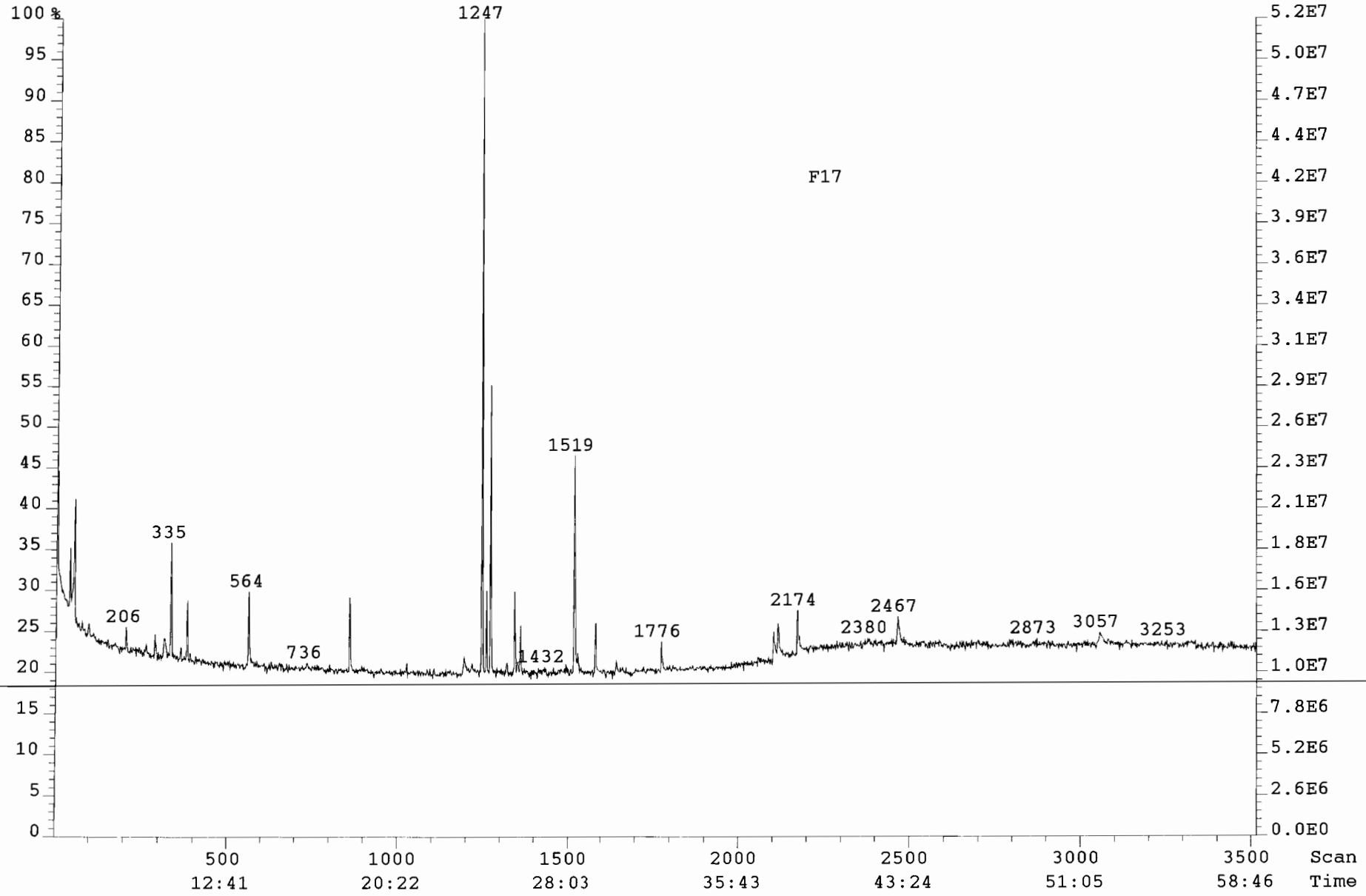
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 8/4/09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28:03
2000
35:43
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F17	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	25-Feb-09
Client Reference:	Samples Received 25/02/09	**Data System Code:**	S0068.3	**Date Analysed:**	24-Mar-09
WRc-NSF Reference:	N22713	**Associated Blank:**	S0068.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0040	d_6-Benzene	P	0.60	2.0	I.S.	Internal Standard
0054	Cyclohexane	P	2.66	8.87	Bz	Contaminant
0206	Toluene	P	0.41	0.9	Cl	Contaminant
0289	Butyl acetate	P	0.36	0.8	Cl	Contaminant
0317	Diacetone alcohol	P	0.80	1.7	Cl	Contaminant
0335	d_5-Chlorobenzene	P	0.92	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	1.02	1.0	I.S.	Internal Standard
0564	d_5-Phenol	P	1.83	8.0	I.S.	Internal Standard
0861	d_8-Naphthalene	P	1.25	1.0	I.S.	Internal Standard
1247	d_{20}-BHT	P	11.48	8.0	I.S.	Internal Standard
1261	BHT	P	1.21	0.8	BHT	Test Material
1273	1,6-Dioxacyclododecane-7,12-dione	T	4.54	3.2	BHT	Test Material
1344	d_{34}-Hexadecane	P	1.49	1.0	I.S.	Internal Standard
1354	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.28	0.2	BHT	Contaminant
1361	Unknown 173, 55, 99, 84	U	0.98	0.7	BHT	Contaminant
1519	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.13	2.0	I.S.	Int. Std. + Contaminant
1529	Tris-(chloropropyl)phosphate isomer	T	0.27	0.2	BHT	Contaminant
1584	Di-isobutyl phthalate	P	0.97	0.7	BHT	Contaminant
1776	Unknown 42, 71, 41, 43	U	0.80	0.6	BHT	Test Material
2105	Di-(2-ethylhexyl) phthalate	P	1.85	7.7	Sq	Contaminant
2117	Unknown 71, 42, 41, 55 (M^+ 360)	U	0.87	3.6	Sq	Test Material
2174	d_{62}-Squalane	P	1.93	8.0	I.S.	Internal Standard
2467	Unknown 42, 71, 41, 72 (M^+ 432)	U	1.14	4.7	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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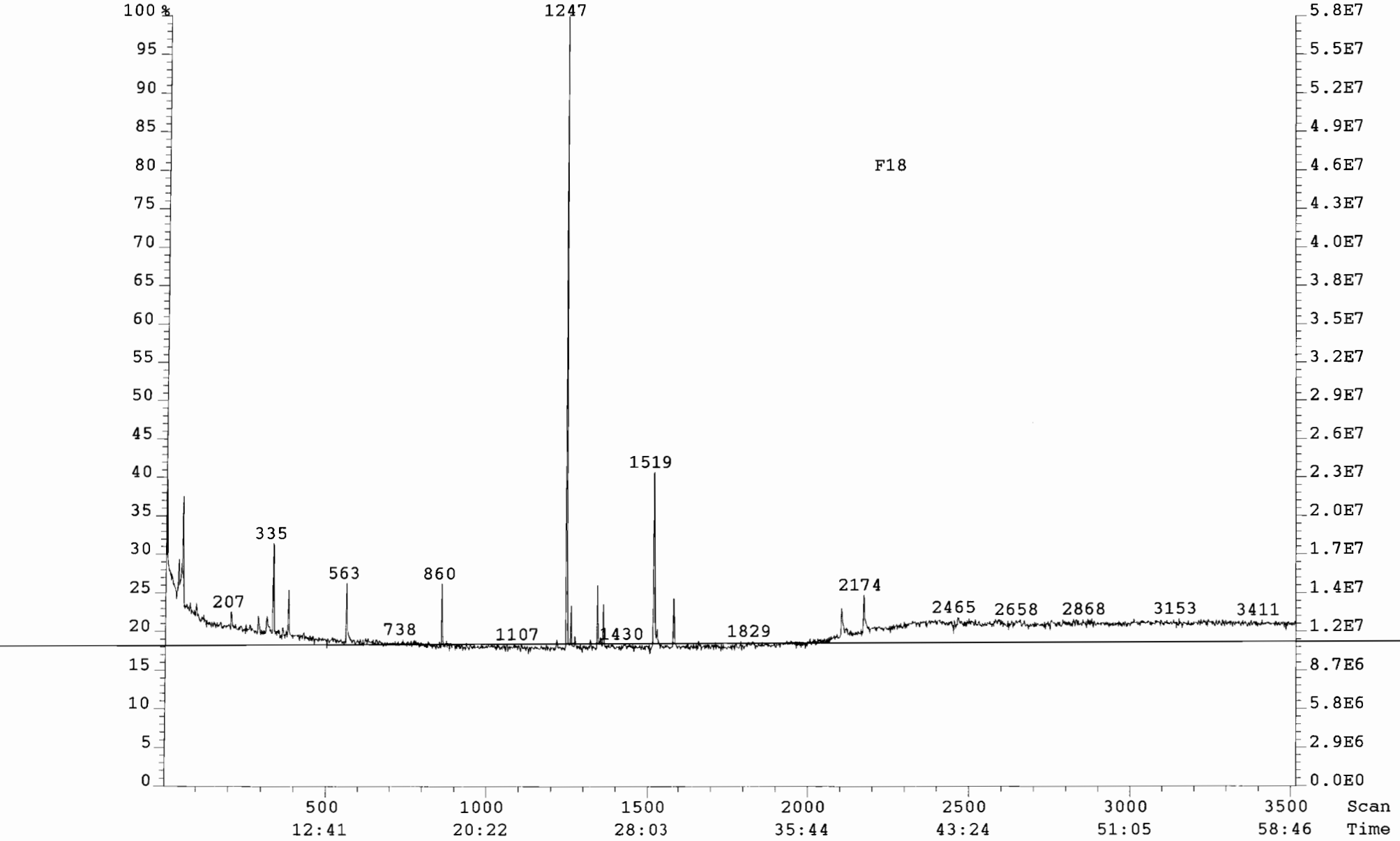
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 8/4/09

File:S0068 #1-3515 Acq:24-MAR-2009 18:13:47 GC EI+ Magnet 70S
TIC (+RP) S:4 Exp:GENSURVEY
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F18	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	25-Feb-09
Client Reference:	Samples Received 25/02/09	**Data System Code:**	S0068.4	**Date Analysed:**	24-Mar-09
WRc-NSF Reference:	N22713	**Associated Blank:**	S0068.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Acetone	P	1.02	2.79	Bz	
0040	d_6-Benzene	P	0.73	2.00	I.S.	Internal Standard
0049	Carbon tetrachloride	P	2.64	7.23	Bz	Contaminant
0054	Cyclohexane	P				Contaminant
0207	Toluene	P	0.45	0.5	Cl	Contaminant
0289	Butyl acetate	P	0.72	0.7	Cl	Contaminant
0316	Diacetone alcohol	P	0.80	0.8	Cl	Contaminant
0335	d_5-Chlorobenzene	P	1.95	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	1.00	1.0	I.S.	Internal Standard
0563	d_5-Phenol	P	1.67	8.0	I.S.	Internal Standard
0860	d_8-Naphthalene	P	1.41	1.0	I.S.	Internal Standard
1247	d_{20}-BHT	P	12.12	8.0	I.S.	Internal Standard
1261	BHT	P	0.70	0.5	BHT	Test Material
1273	1,6-Dioxacyclododecane-7,12-dione	T	0.18	0.1	BHT	Test Material
1321	Diethyl phthalate	P	0.24	0.2	BHT	Contaminant
1344	d_{34}-Hexadecane	P	1.48	1.0	I.S.	Internal Standard
1353	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.39	0.3	BHT	Contaminant
1361	Unknown 173, 55, 99, 84	U	0.97	0.6	BHT	Contaminant
1519	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.63	2.0	I.S.	Int. Std. + Contaminant
1528	Tris-(chloropropyl)phosphate isomer	T	0.24	0.2	BHT	Contaminant
1583	Di-isobutyl phthalate	P	0.92	0.6	BHT	Contaminant
2105	Di-(2-ethylhexyl) phthalate	P	1.67	7.5	Sq	Contaminant
2174	d_{62}-Squalane	P	1.79	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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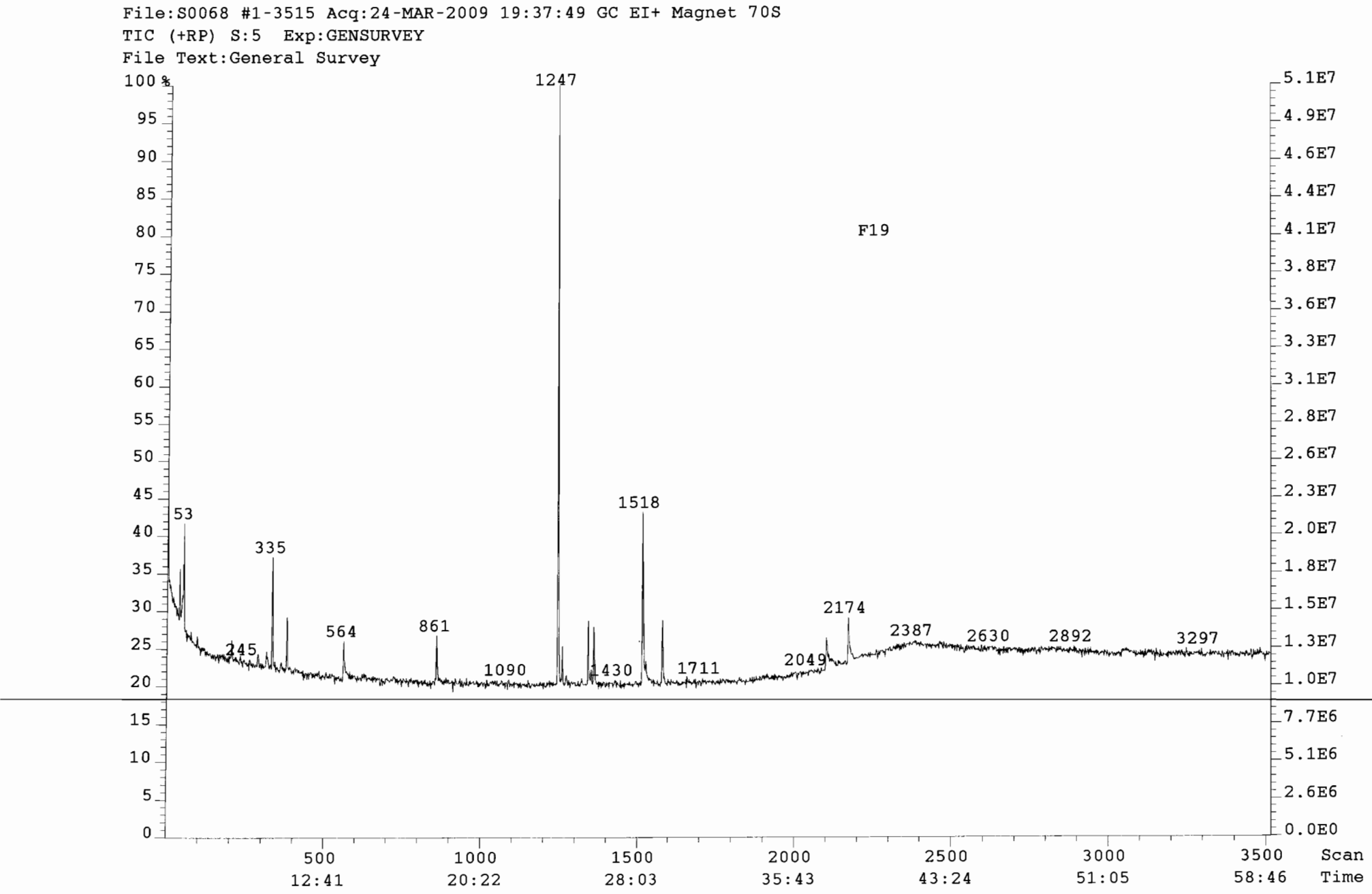
Reported By: H. A. Jones

Authorised By: J. Dunning
Laboratory Manager

Date: 20/4/09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File Text:General Survey
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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F19	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	25-Feb-09
Client Reference:	Samples Received 25/02/09	**Data System Code:**	S0068.6	**Date Analysed:**	24-Mar-09
WRc-NSF Reference:	N22713	**Associated Blank:**	S0068.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0040	d_6-Benzene	P	0.73	2.00	I.S.	Internal Standard
0049	Carbon tetrachloride	P	2.48	6.79	Bz	Contaminant
0053	Cyclohexane	P				Contaminant
0206	Toluene	P	0.43	0.4	Cl	Contaminant
0289	Butyl acetate	P	0.33	0.3	Cl	Contaminant
0316	Diacetone alcohol	P	0.78	0.7	Cl	Contaminant
0335	d_5-Chlorobenzene	P	2.11	2.0	I.S.	Internal Standard
0382	d_{10}-p-Xylene	P	1.01	1.0	I.S.	Internal Standard
0564	d_5-Phenol	P	1.33	8.0	I.S.	Internal Standard
0860	d_8-Naphthalene	P	1.47	1.0	I.S.	Internal Standard
1247	d_{20}-BHT	P	12.24	8.0	I.S.	Internal Standard
1261	BHT	P	0.53	0.3	BHT	Test Material
1320	Diethyl phthalate	P	0.41	0.3	BHT	Contaminant
1343	d_{34}-Hexadecane	P	1.6	1.0	I.S.	Internal Standard
1352	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.49	0.3	BHT	Contaminant
1360	Unknown 173, 55, 99, 84	U	1.24	0.8	BHT	Contaminant
1516	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	6.37	2.0	I.S.	Int. Std. + Contaminant
1525	Tris-(chloropropyl)phosphate isomer	T	0.33	0.2	BHT	Contaminant
1581	Di-isobutyl phthalate	P	1.84	1.2	BHT	Contaminant
1659	Di-n-butyl phthalate	P	0.55	0.4	BHT	Contaminant
2103	Di-(2-ethylhexyl) phthalate	P	1.96	5.7	Sq	Contaminant
2174	d_{62}-Squalane	P	2.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 21/4/09

File:S0068 #1-3514 Acq:24-MAR-2009 21:01:49 GC EI+ Magnet 70S
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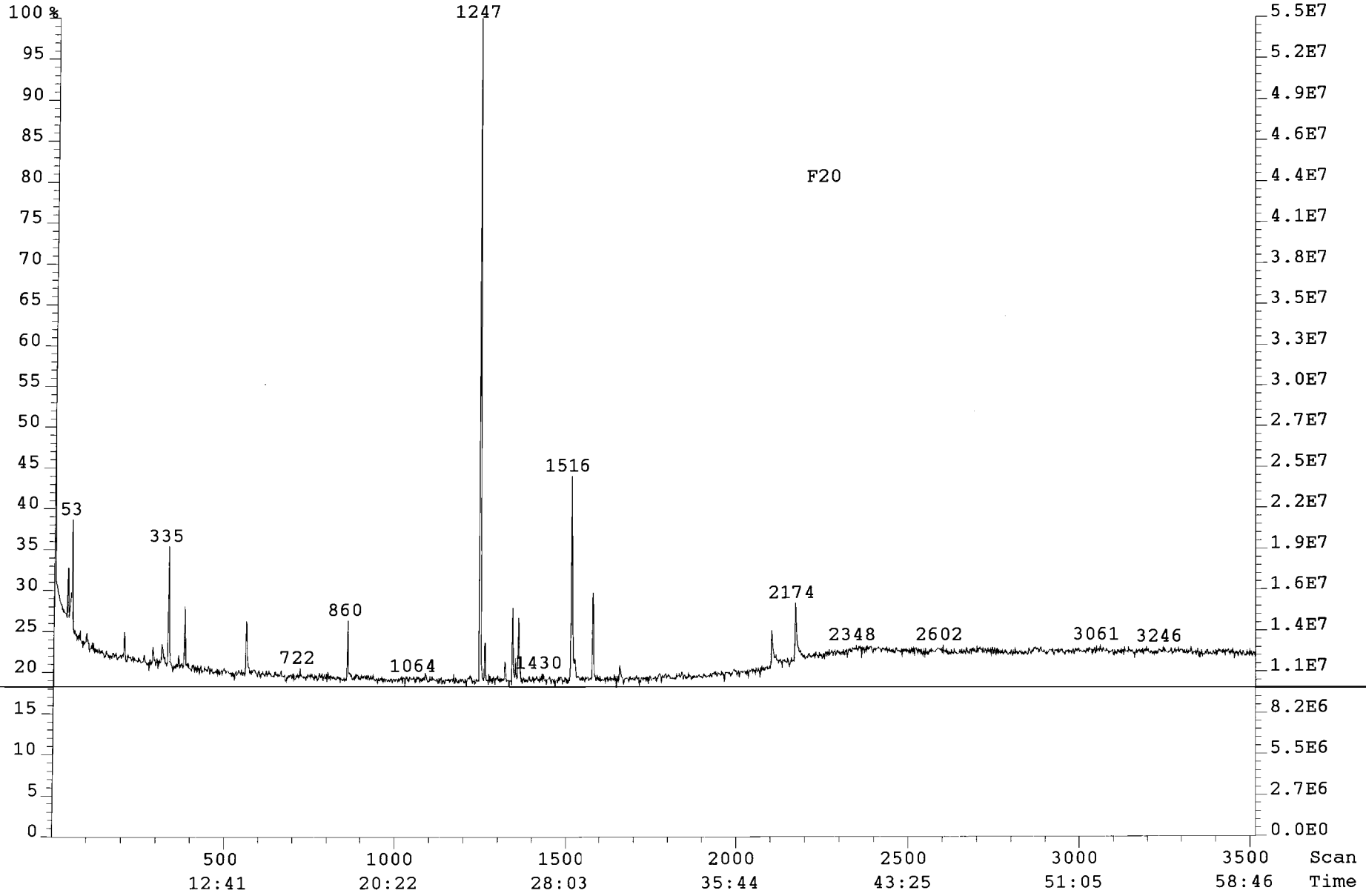
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F20	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	25-Feb-09
Client Reference:	Samples Received 25/02/09	**Data System Code:**	S0068.6	**Date Analysed:**	24-Mar-09
WRc-NSF Reference:	N22713	**Associated Blank:**	S0068.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0040	d_6-Benzene	P	0.73	2.00	I.S.	Internal Standard
0049	Carbon tetrachloride	P	2.48	6.79	Bz	Contaminant
0053	Cyclohexane	P				Contaminant
0206	Toluene	P	0.43	0.4	Cl	Contaminant
0289	Butyl acetate	P	0.33	0.3	Cl	Contaminant
0316	Diacetone alcohol	P	0.78	0.7	Cl	Contaminant
0335	d_5-Chlorobenzene	P	2.11	2.0	I.S.	Internal Standard
0382	d_{10}-p-Xylene	P	1.01	1.0	I.S.	Internal Standard
0564	d_5-Phenol	P	1.33	8.0	I.S.	Internal Standard
0860	d_8-Naphthalene	P	1.47	1.0	I.S.	Internal Standard
1247	d_{20}-BHT	P	12.24	8.0	I.S.	Internal Standard
1261	BHT	P	0.53	0.3	BHT	Test Material
1320	Diethyl phthalate	P	0.41	0.3	BHT	Contaminant
1343	d_{34}-Hexadecane	P	1.6	1.0	I.S.	Internal Standard
1352	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.49	0.3	BHT	Contaminant
1360	Unknown 173, 55, 99, 84	U	1.24	0.8	BHT	Contaminant
1516	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	6.37	2.0	I.S.	Int. Std. + Contaminant
1525	Tris-(chloropropyl)phosphate isomer	T	0.33	0.2	BHT	Contaminant
1581	Di-isobutyl phthalate	P	1.84	1.2	BHT	Contaminant
1659	Di-n-butyl phthalate	P	0.55	0.4	BHT	Contaminant
2103	Di-(2-ethylhexyl) phthalate	P	1.96	5.7	Sq	Contaminant
2174	d_{62}-Squalane	P	2.77	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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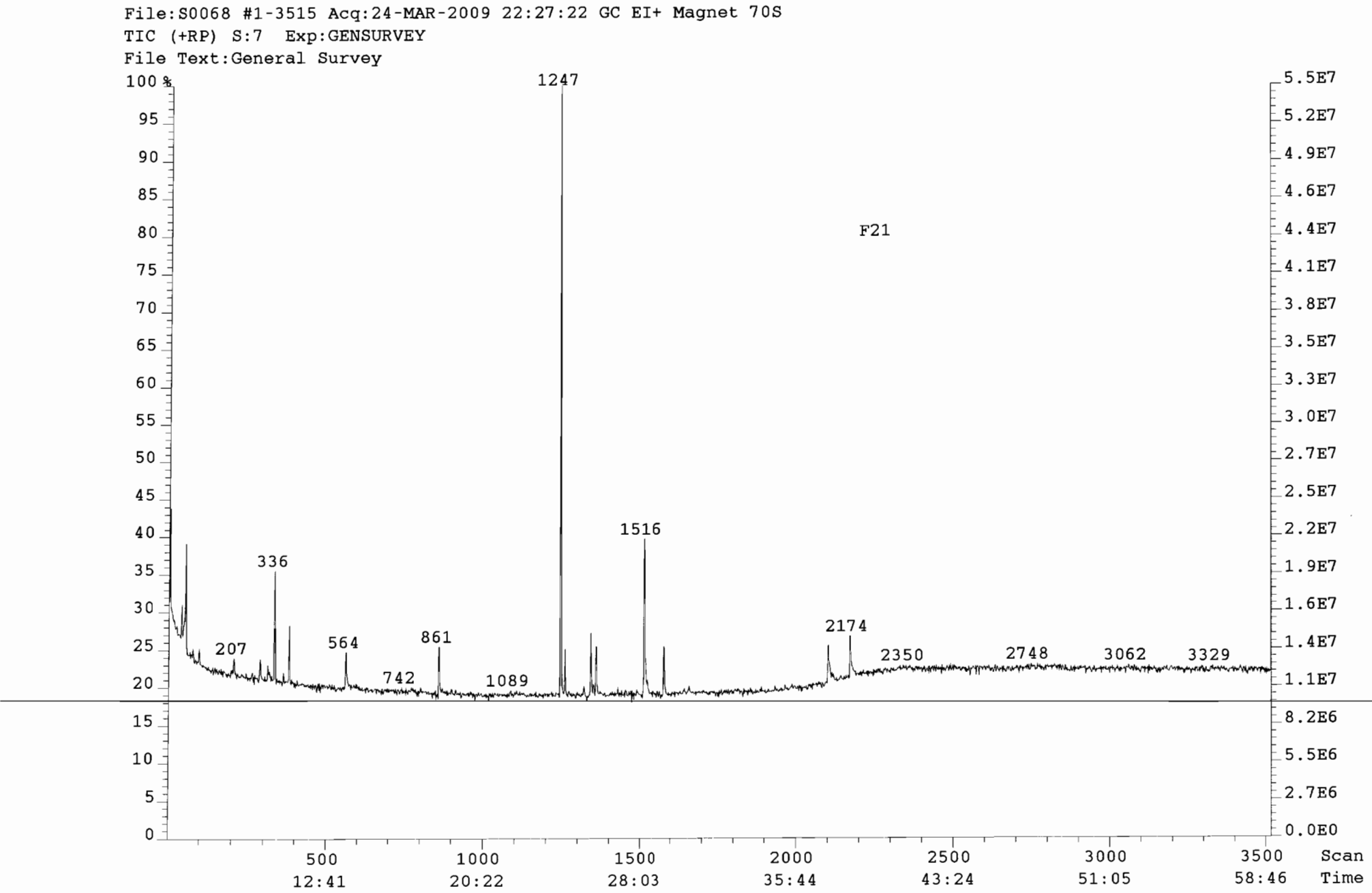
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 20/4/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	F21	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	25-Feb-09
Client Reference:	Samples Received 25/02/09	**Data System Code:**	S0068.7	**Date Analysed:**	24-Mar-09
WRc-NSF Reference:	N22713	**Associated Blank:**	S0068.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0002	Acetone	P	1.27	3.6	Bz	Contaminant
0041	d_6-Benzene	P	0.70	2.0	I.S.	Internal Standard
0049	Carbon tetrachloride	P	2.95	8.4	Bz	Contaminant
0054	Cyclohexane	P				Contaminant
0098	1,4-Dioxane	P	0.27	0.8	Bz	Contaminant
0207	Toluene	P	0.26	0.3	Cl	Contaminant
0290	Butyl acetate	P	0.58	0.6	Cl	Contaminant
0316	Diacetone alcohol	P	0.57	0.6	Cl	Contaminant
0336	d_5-Chlorobenzene	P	1.81	2.0	I.S.	Internal Standard
0383	d_{10}-p-Xylene	P	1.02	1.0	I.S.	Internal Standard
0564	d_5-Phenol	P	1.52	8.0	I.S.	Internal Standard
0861	d_8-Naphthalene	P	1.27	1.0	I.S.	Internal Standard
1247	d_{20}-BHT	P	11.68	8.0	I.S.	Internal Standard
1261	BHT	P	0.60	0.4	BHT	Test Material
1321	Diethyl phthalate	P	0.20	0.1	BHT	Contaminant
1343	d_{34}-Hexadecane	P	1.41	1.0	I.S.	Internal Standard
1351	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.36	0.2	BHT	Contaminant
1360	Unknown 173, 55, 99, 84	U	1.46	1.0	BHT	Contaminant
1516	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.07	2.0	I.S.	Int. Std. + Contaminant
1525	Tris-(chloropropyl)phosphate isomer	T	0.13	0.1	BHT	Contaminant
1580	Di-isobutyl phthalate	P	1.17	0.8	BHT	Contaminant
2104	Di-(2-ethylhexyl) phthalate	P	1.99	8.4	Sq	Contaminant
2174	d_{62}-Squalane	P	1.90	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-di-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalene

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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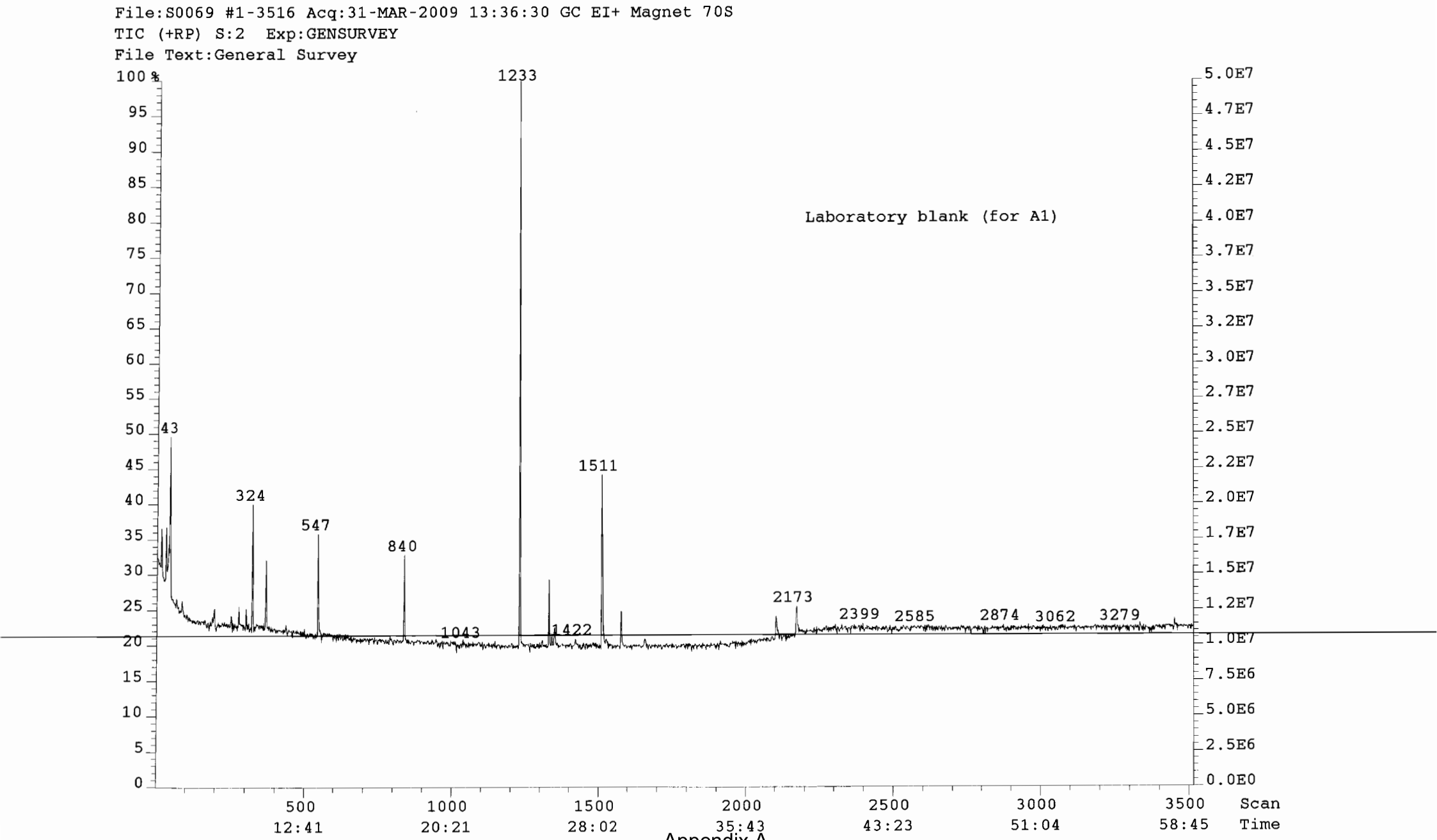
Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 21/4/09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File Text:General Survey
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Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	03-Mar-09
Client Reference:	Samples Received 03/03/09	**Data System Code:**	S0069.2	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22717	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0014	2-Methyl-1,3-dioxolane	T	0.69	2.1	Bz	Contaminant
0030	d_6-Benzene	P	0.66	2.0	I.S.	Internal Standard
0038	Carbon tetrachloride	P	0.18	0.5	Bz	Contaminant
0043	Cyclohexane	P	3.09	9.4	Bz	Contaminant
0197	Toluene	P	0.42	0.4	Cl	Contaminant
0279	Butyl acetate	P	0.39	0.4	Cl	Contaminant
0303	Diacetone alcohol	P	0.43	0.4	Cl	Contaminant
0324	d_5-Chlorobenzene	P	1.99	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	0.99	1.0	I.S.	Internal Standard
0547	d_5-Phenol	P	2.24	8.0	I.S.	Internal Standard
0840	d_8-Naphthalene	P	1.65	1.0	I.S.	Internal Standard
1233	d_{20}-BHT	P	10.48	8.0	I.S.	Internal Standard
1332	d_{34}-Hexadecane	P	1.29	1.0	I.S.	Internal Standard
1342	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.16	0.1	BHT	Contaminant
1352	Unknown 173, 55, 99, 84	U	0.46	0.4	BHT	Contaminant
1511	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.82	2.0	I.S.	Int. Std. + Contaminant
1525	Tris-(chloropropyl)phosphate isomer	T	0.25	0.2	BHT	Contaminant
1579	Di-isobutyl phthalate	P	0.84	0.6	BHT	Contaminant
2104	Di-(2-ethylhexyl) phthalate	P	1.20	6.7	Sq	Contaminant
2173	d_{62}-Squalane	P	1.43	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

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Reported By: I A James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 20/4/09

File:S0069 #1-3515 Acq:31-MAR-2009 15:00:49 GC EI+ Magnet 70S
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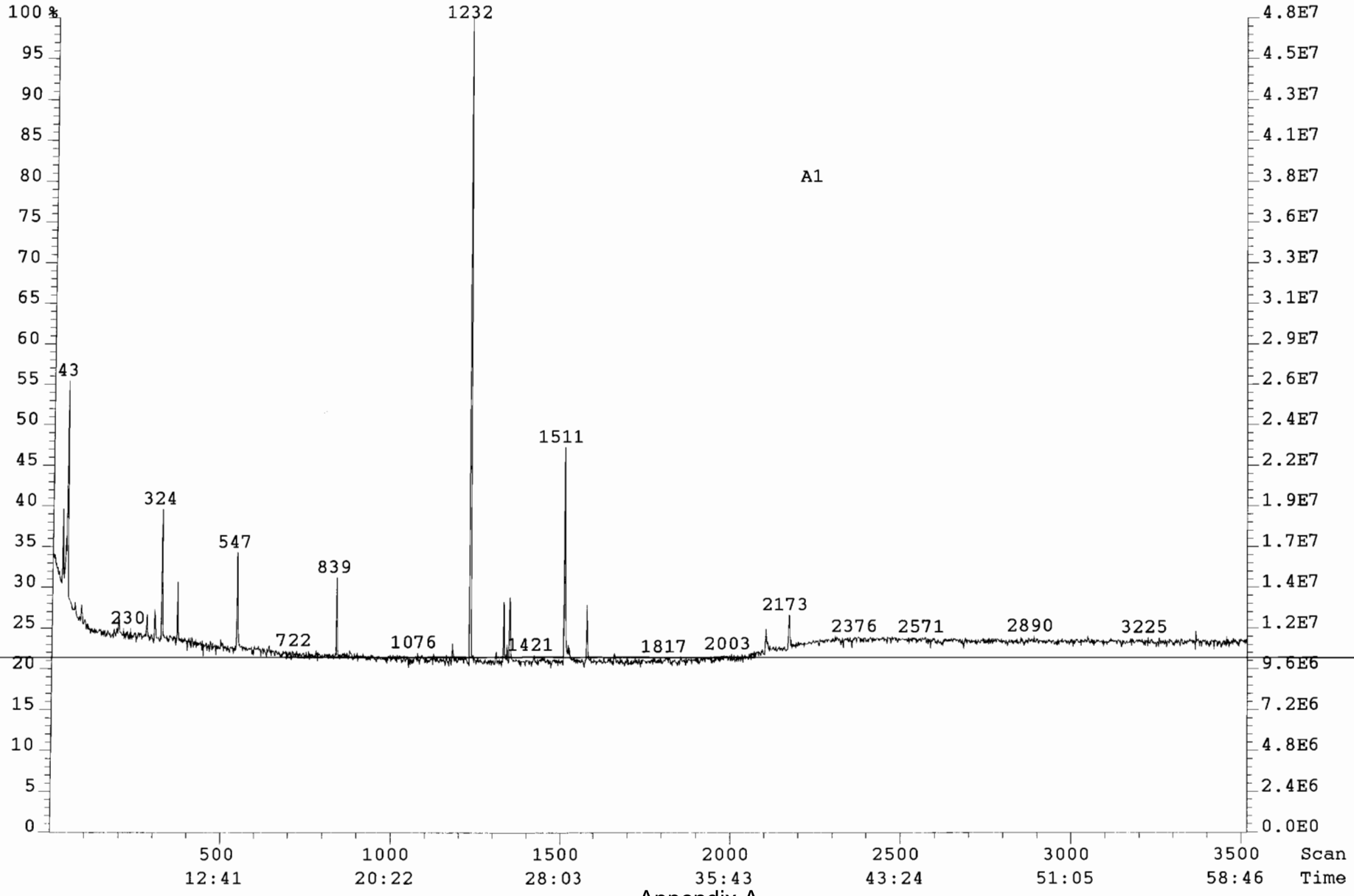
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A1	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	03-Mar-09
Client Reference:	Samples Received 03/03/09	**Data System Code:**	S0069.3	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22717	**Associated Blank:**	S0069.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0029	d_6-Benzene	P	0.70	2.0	I.S.	Internal Standard
0038	Carbon tetrachloride	P	0.18	0.5	Bz	Contaminant
0043	Cyclohexane	P	3.01	8.6	Bz	Contaminant
0196	Toluene	P	0.33	0.4	Cl	Contaminant
0279	Butyl acetate	P	0.35	0.4	Cl	Contaminant
0302	Diacetone alcohol	P	0.43	0.5	Cl	Contaminant
0324	d_5-Chlorobenzene	P	1.70	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	0.86	1.0	I.S.	Internal Standard
0547	d_5-Phenol	P	1.98	8.0	I.S.	Internal Standard
0839	d_8-Naphthalene	P	1.09	1.0	I.S.	Internal Standard
1232	d_{20}-BHT	P	9.84	8.0	I.S.	Internal Standard
1308	Diethyl phthalate	P	0.27	0.2	BHT	Test Material
1331	d_{34}-Hexadecane	P	1.13	1.0	I.S.	Internal Standard
1341	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.31	0.3	BHT	Contaminant
1349	Unknown 173, 55, 99, 84	U	1.24	1.0	BHT	Contaminant
1511	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.20	2.0	I.S.	Int. Std. + Contaminant
1522	Tris-(chloropropyl)phosphate isomer	T	0.21	0.2	BHT	Contaminant
1579	Di-isobutyl phthalate	P	1.18	1.0	BHT	Contaminant
2104	Di-(2-ethylhexyl) phthalate	P	1.10	5.8	Sq	Contaminant
2173	d_{62}-Squalane	P	1.51	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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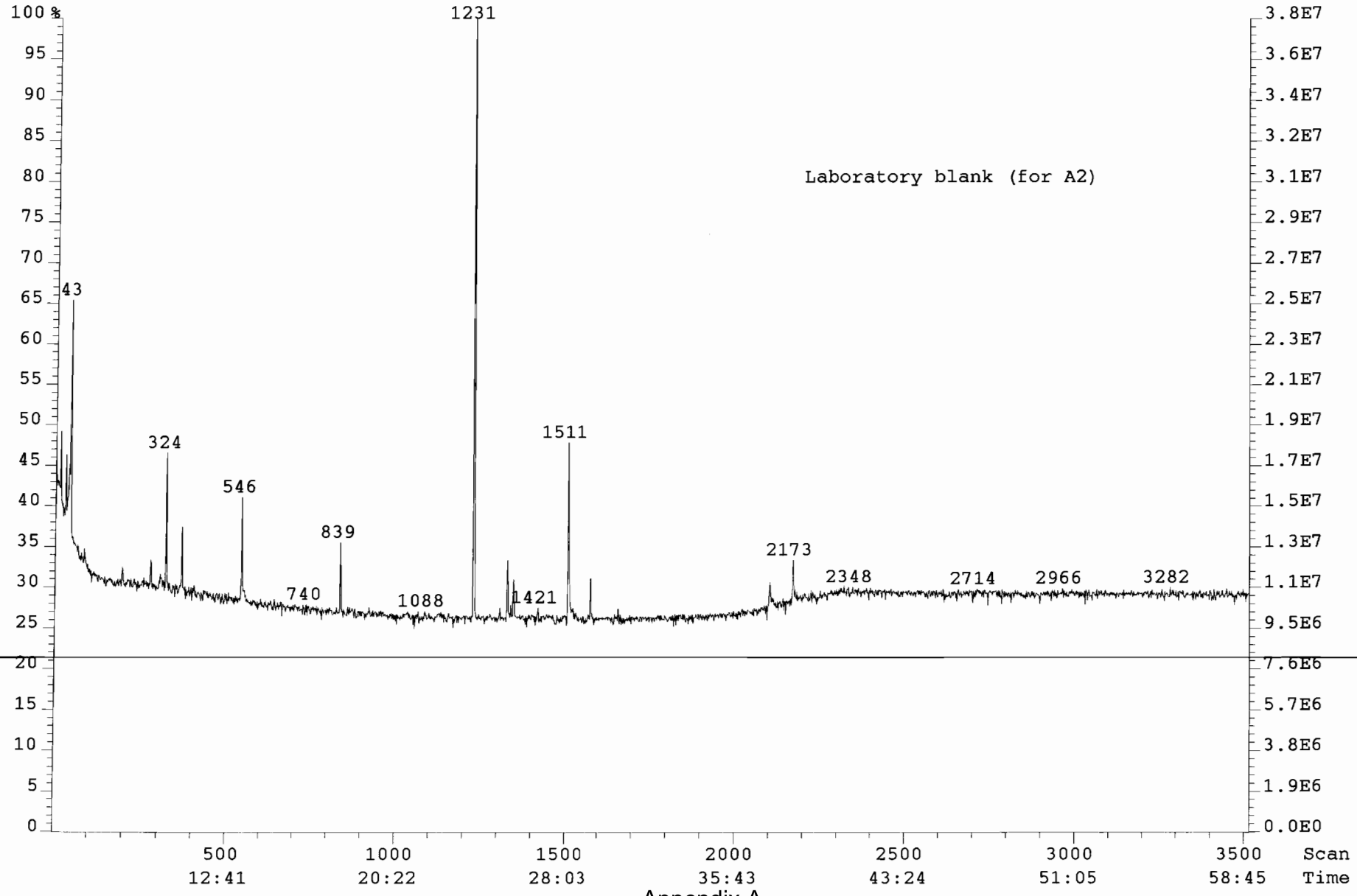
Reported By: H. A. James.

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 20/4/09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File Text:General Survey
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1421
1511
2173
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2966
3282
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90
85
80
75
70
65
60
55
50
45
40
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25
20
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10
5
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3.8E7
3.6E7
3.4E7
3.2E7
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2.9E7
2.7E7
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43:24
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51:05
3500
58:45
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	06-Mar-09
Client Reference:	Samples Received 06/03/09	**Data System Code:**	S0069.4	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22722	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0013	2-Methyl-1,3-dioxolane	T	0.46	2.1	Bz	Contaminant
0029	d_6-Benzene	P	0.44	2.0	I.S.	Internal Standard
0038	Carbon tetrachloride	P	0.15	0.7	Bz	Contaminant
0043	Cyclohexane	P	2.75	12.5	Bz	Contaminant
0196	Toluene	P	0.33	0.5	Cl	Contaminant
0278	Butyl acetate	P	0.30	0.4	Cl	Contaminant
0305	Diacetone alcohol	P	0.52	0.8	Cl	Contaminant
0324	d_5-Chlorobenzene	P	1.34	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.87	1.0	I.S.	Internal Standard
0546	d_5-Phenol	P	1.84	8.0	I.S.	Internal Standard
0839	d_8-Naphthalene	P	1.22	1.0	I.S.	Internal Standard
1231	d_{20}-BHT	P	7.68	8.0	I.S.	Internal Standard
1308	Diethyl phthalate	P	0.16	0.2	BHT	Contaminant
1331	d_{34}-Hexadecane	P	0.74	1.0	I.S.	Internal Standard
1340	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.13	0.1	BHT	Contaminant
1349	Unknown 173, 55, 99, 84	U	0.56	0.6	BHT	Contaminant
1510	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	3.12	2.0	I.S.	Int. Std. + Contaminant
1522	Tris-(chloropropyl)phosphate isomer	T	0.16	0.2	BHT	Contaminant
1579	Di-isobutyl phthalate	P	0.66	0.7	BHT	Contaminant
2104	Di-(2-ethylhexyl) phthalate	P	0.94	5.2	Sq	Contaminant
2173	d_{62}-Squalane	P	1.44	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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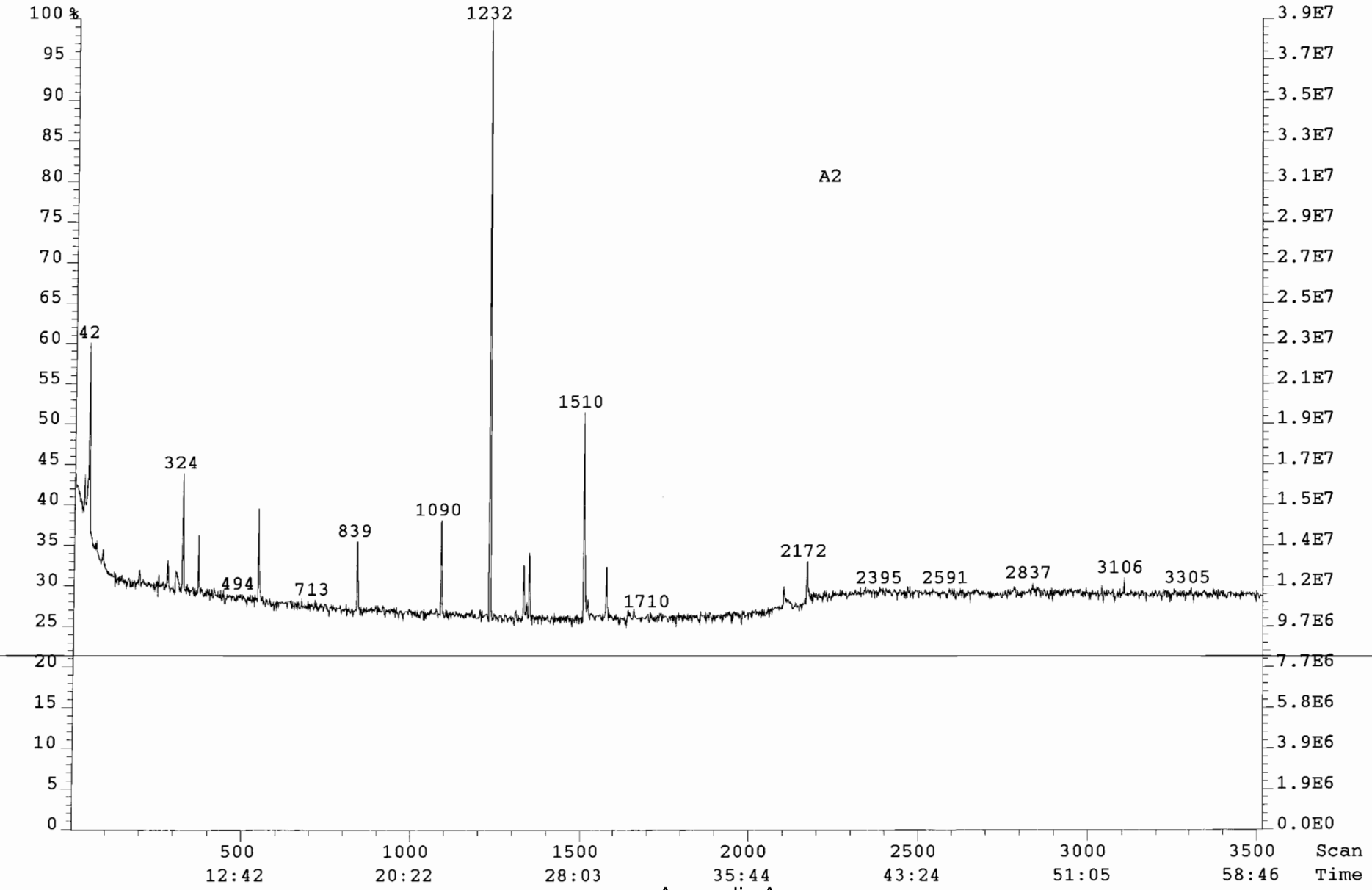
Reported By: A. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 5/5/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A2	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	06-Mar-09
Client Reference:	Samples Received 06/03/09	**Data System Code:**	S0069.5	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22722	**Associated Blank:**	S0069.4	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0029	d_6-Benzene	P	0.38	2.0	I.S.	Internal Standard
0037	Carbon tetrachloride	P	0.16	0.8	Bz	Contaminant
0042	Cyclohexane	P	2.76	14.5	Bz	Contaminant
0087	1,4-Dioxane	P	0.23	1.2	Bz	Contaminant
0196	Toluene	P	0.25	0.4	Cl	Contaminant
0279	Butyl acetate	P	0.47	0.8	Cl	Contaminant
0303	Diacetone alcohol	P	0.87	1.4	Cl	Contaminant
0324	d_5-Chlorobenzene	P	1.24	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.65	1.0	I.S.	Internal Standard
0547	d_5-Phenol	P	1.74	8.0	I.S.	Internal Standard
0839	d_8-Naphthalene	P	1.10	1.0	I.S.	Internal Standard
1090	Unknown 43, 58, 41, 27	U	1.26	1.3	BHT	Test Material
1232	d_{20}-BHT	P	7.71	8.0	I.S.	Internal Standard
1309	Diethyl phthalate	P	0.23	0.2	BHT	Test Material
1331	d_{34}-Hexadecane	P	0.81	1.0	I.S.	Internal Standard
1340	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.42	0.4	BHT	Contaminant
1348	Unknown 173, 55, 99, 84	U	1.15	1.2	BHT	Contaminant
1510	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	3.90	2.0	I.S.	Int. Std. + Contaminant
1522	Tris-(chloropropyl)phosphate isomer	T	0.34	0.4	BHT	Contaminant
1578	Di-isobutyl phthalate	P	0.95	1.0	BHT	Contaminant
2104	Di-(2-ethylhexyl) phthalate	P	0.89	3.4	Sq	Contaminant
2173	d_{62}-Squalane	P	2.09	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

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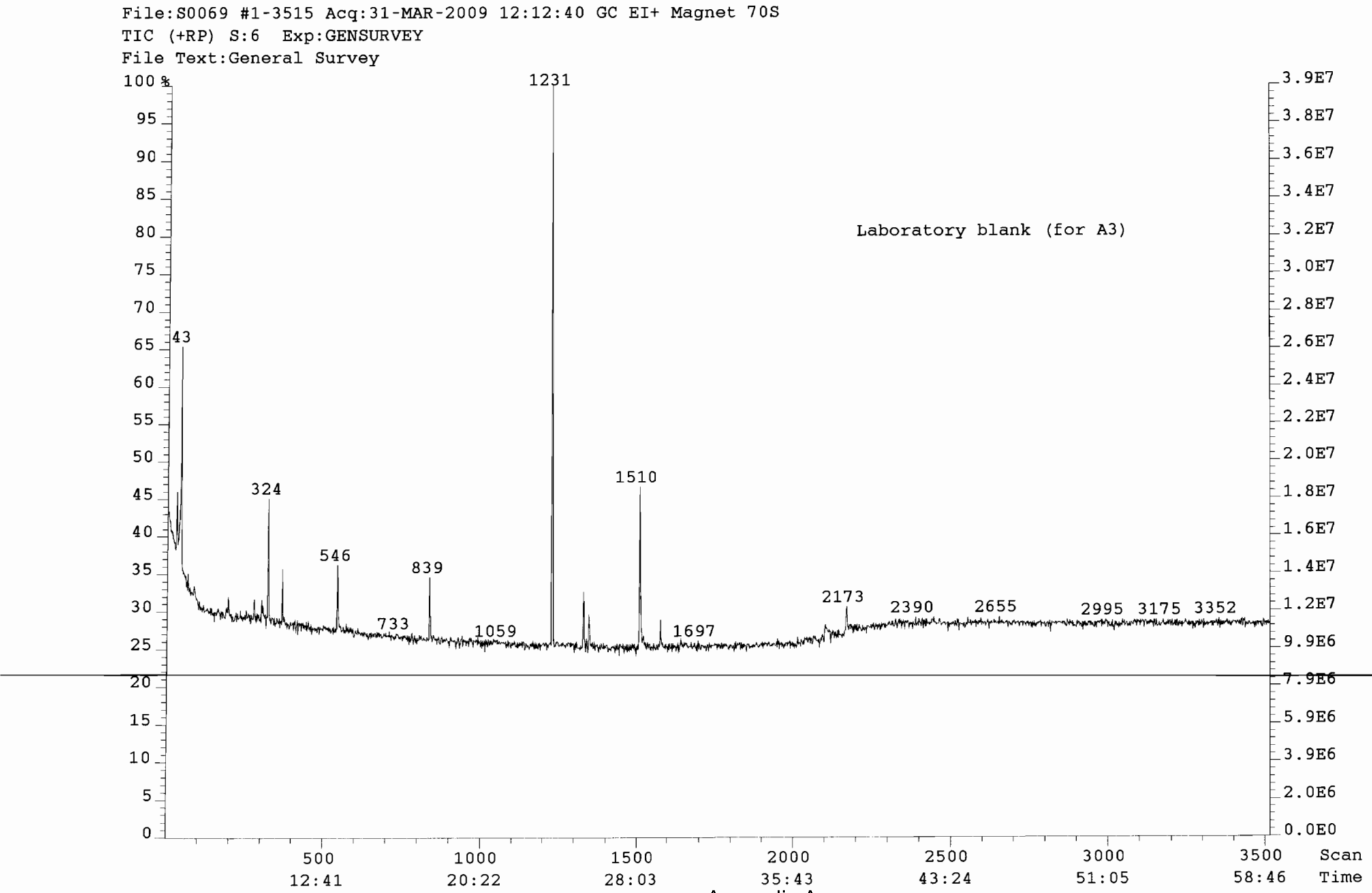
Reported By: H. A. James

Authorised By: John Dunning
J. Dunning
Laboratory Manager

Date: 5/5/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	10-Mar-09
Client Reference:	Samples Received 10/03/09	**Data System Code:**	S0069.7	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22723	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0029	d_6-Benzene	P	0.49	2.0	I.S.	Internal Standard
0038	Carbon tetrachloride	P	0.21	0.9	Bz	Contaminant
0043	Cyclohexane	P	2.55	10.4	Bz	Contaminant
0196	Toluene	P	0.26	0.3	Cl	Contaminant
0279	Butyl acetate	P	0.32	0.4	Cl	Contaminant
0303	Diacetone alcohol	P	0.60	0.8	Cl	Contaminant
0324	d_5-Chlorobenzene	P	1.51	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.78	1.0	I.S.	Internal Standard
0546	d_5-Phenol	P	1.57	8.0	I.S.	Internal Standard
0839	d_8-Naphthalene	P	0.94	1.0	I.S.	Internal Standard
1231	d_{20}-BHT	P	7.84	8.0	I.S.	Internal Standard
1331	d_{34}-Hexadecane	P	0.99	1.0	I.S.	Internal Standard
1340	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.27	0.3	BHT	Contaminant
1348	Unknown 173, 55, 99, 84	U	0.92	0.9	BHT	Contaminant
1510	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	3.25	2.0	I.S.	Int. Std. + Contaminant
1521	Tris-(chloropropyl)phosphate isomer	T	0.23	0.2	BHT	Contaminant
1578	Di-isobutyl phthalate	P	0.43	0.4	BHT	Contaminant
2104	Di-(2-ethylhexyl) phthalate	P	0.93	4.8	Sq	Contaminant
2173	d_{62}-Squalane	P	1.56	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 5/5/09

File:S0069 #1-3515 Acq:31-MAR-2009 20:36:15 GC EI+ Magnet 70S
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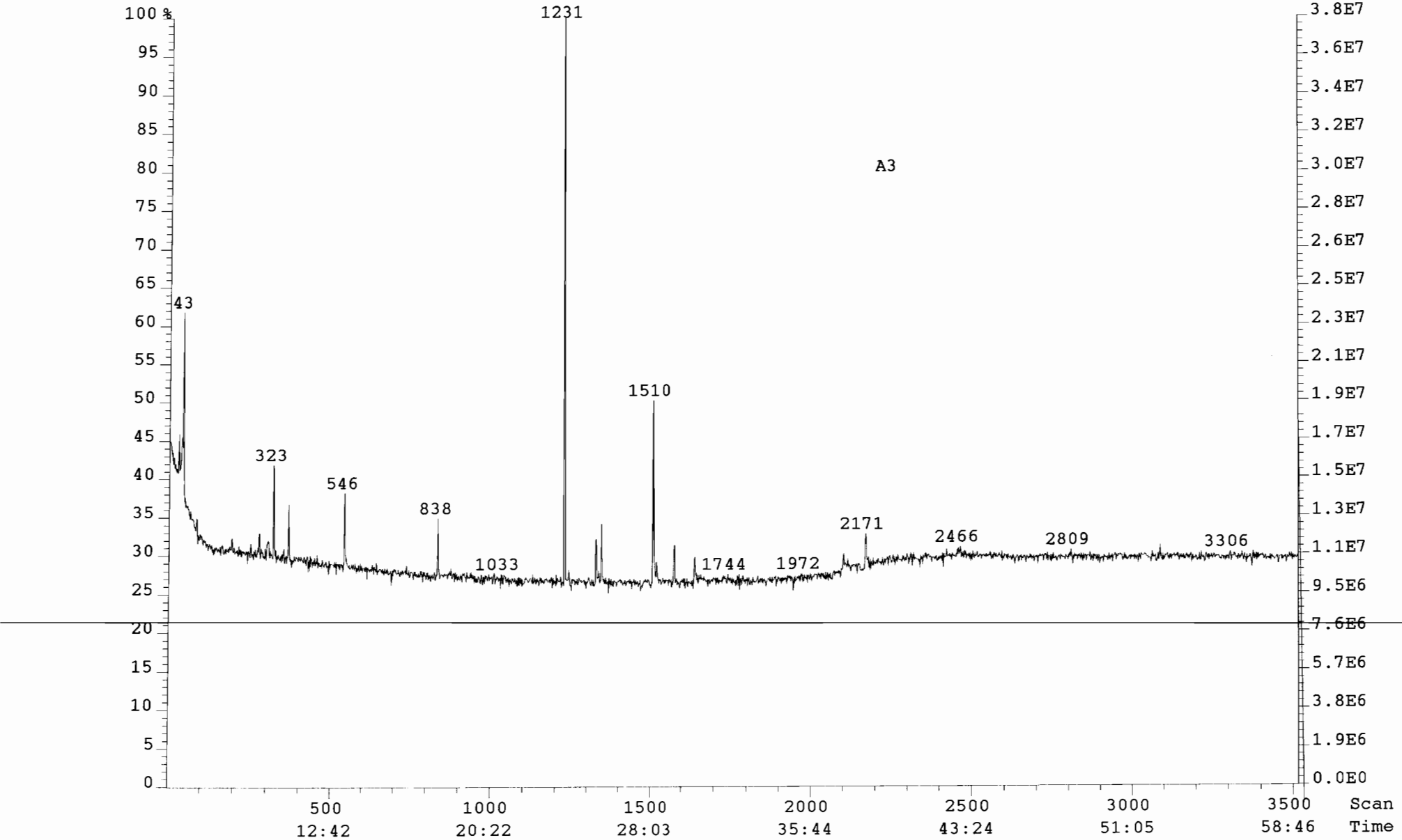


ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A3	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	10-Mar-09
Client Reference:	Samples Received 10/03/09	**Data System Code:**	S0069.7	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22723	**Associated Blank:**	S0069.6	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0029	d_6-Benzene	P	0.37	2.0	I.S.	Internal Standard
0038	Carbon tetrachloride	P	0.22	1.2	Bz	Contaminant
0043	Cyclohexane	P	2.49	13.5	Bz	Contaminant
0279	Butyl acetate	P	0.25	0.4	Cl	Contaminant
0307	Diacetone alcohol	P	0.58	1.0	Cl	Contaminant
0323	d_5-Chlorobenzene	P	1.13	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	0.75	1.0	I.S.	Internal Standard
0546	d_5-Phenol	P	1.17	8.0	I.S.	Internal Standard
0838	d_8-Naphthalene	P	0.86	1.0	I.S.	Internal Standard
1231	d_{20}-BHT	P	7.08	8.0	I.S.	Internal Standard
1245	BHT	P	0.27	0.3	BHT	Test Material
1331	d_{34}-Hexadecane	P	0.75	1.0	I.S.	Internal Standard
1348	Unknown 173, 55, 99, 84	U	0.89	1.0	BHT	Contaminant
1510	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	3.40	2.0	I.S.	Int. Std. + Contaminant
1520	Tris-(chloropropyl)phosphate isomer	T	0.21	0.2	BHT	Contaminant
1578	Di-isobutyl phthalate	P	0.72	0.8	BHT	Contaminant
1642	2-Phenyltridecane	T	0.58	0.7	BHT	Contaminant
2103	Di-(2-ethylhexyl) phthalate	P	0.64	3.9	Sq	Contaminant
2171	d_{62}-Squalane	P	1.30	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

Tests marked $: Not included in the WRc-NSF UKAS Accreditation Schedule.

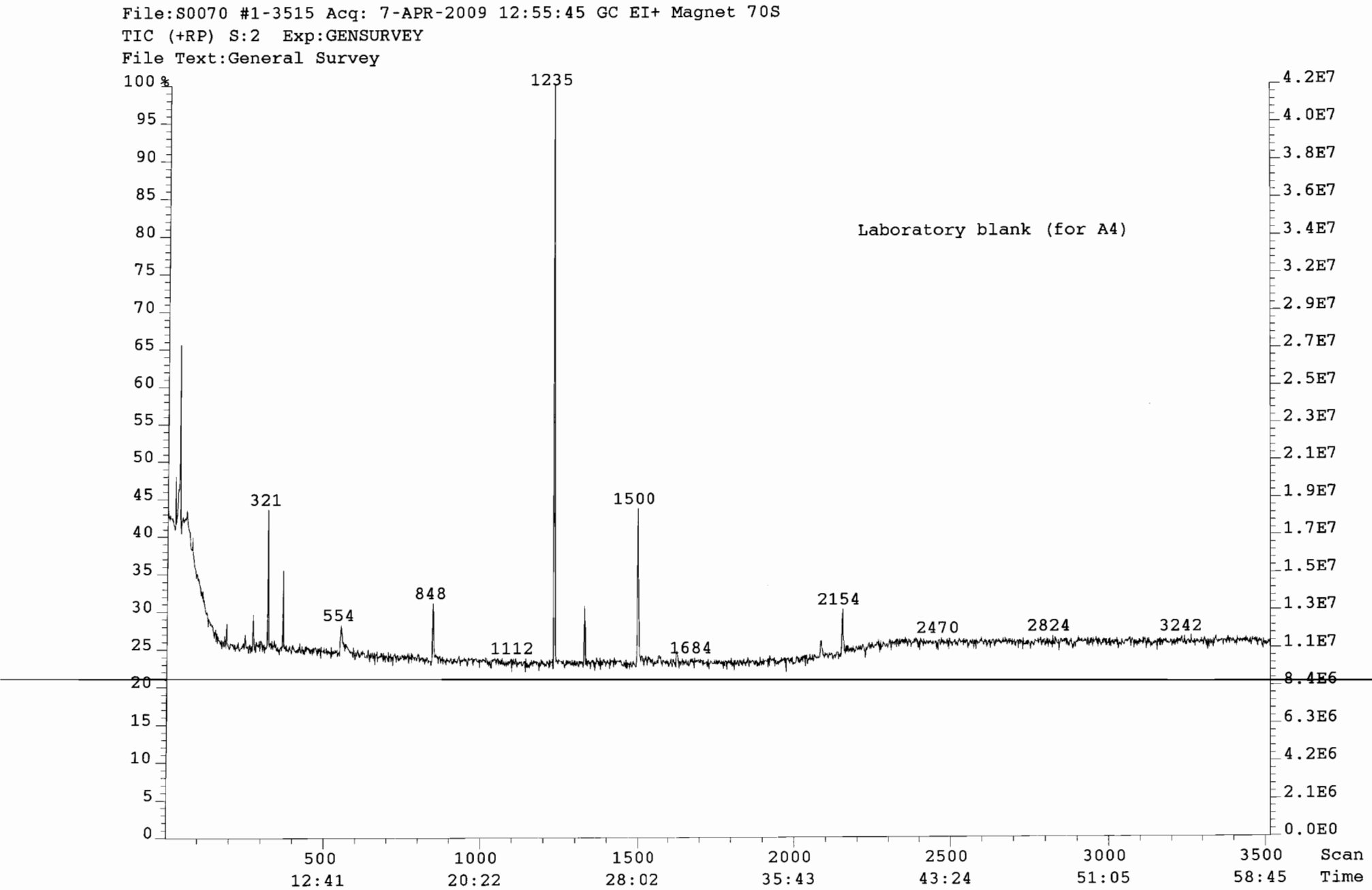
Tests marked @: Tests not performed by WRc-NSF, approved subcontractor is not UKAS accredited for this test.

Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: H. A. Jones

Authorised By: J. Dunning
Laboratory Manager

Date: 6/5/09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File Text:General Survey
Laboratory blank (for A4)
1235
321
1500
554
848
1112
1684
2154
2470
2824
3242
100 %
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
4.2E7
4.0E7
3.8E7
3.6E7
3.4E7
3.2E7
2.9E7
2.7E7
2.5E7
2.3E7
2.1E7
1.9E7
1.7E7
1.5E7
1.3E7
1.1E7
8.4E6
6.3E6
4.2E6
2.1E6
0.0E0
500
12:41
1000
20:22
1500
28:02
2000
35:43
2500
43:24
3000
51:05
3500
58:45
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	11-Mar-09
Client Reference:	Samples Received 11/03/09	**Data System Code:**	S0070.2	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22724	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.57	2.0	I.S.	Internal Standard
0033	Carbon tetrachloride	P	0.17	0.6	Bz	Contaminant
0039	Cyclohexane	P	3.16	11.1	Bz	Contaminant
0062	Methyl isobutyrate	T	0.16	0.6	Bz	Contaminant
0081	1,4-Dioxane	P	0.17	0.6	Bz	Contaminant
0191	Toluene	P	0.33	0.4	Cl	Contaminant
0275	Butyl acetate	P	0.53	0.7	Cl	Contaminant
0321	d_5-Chlorobenzene	P	1.58	2.0	I.S.	Internal Standard
0368	d_{10}-p-Xylene	P	0.83	1.0	I.S.	Internal Standard
0554	d_5-Phenol	P	1.93	8.0	I.S.	Internal Standard
0848	d_8-Naphthalene	P	1.25	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	9.02	8.0	I.S.	Internal Standard
1330	d_{34}-Hexadecane	P	1.27	1.0	I.S.	Internal Standard
1500	d_{10}-Phenanthrene	P/T	3.37	2.0	I.S.	Int. Std. + Contaminant
2085	Di-(2-ethylhexyl) phthalate	P	0.63	3.4	Sq	Contaminant
2154	d_{62}-Squalane	P	1.48	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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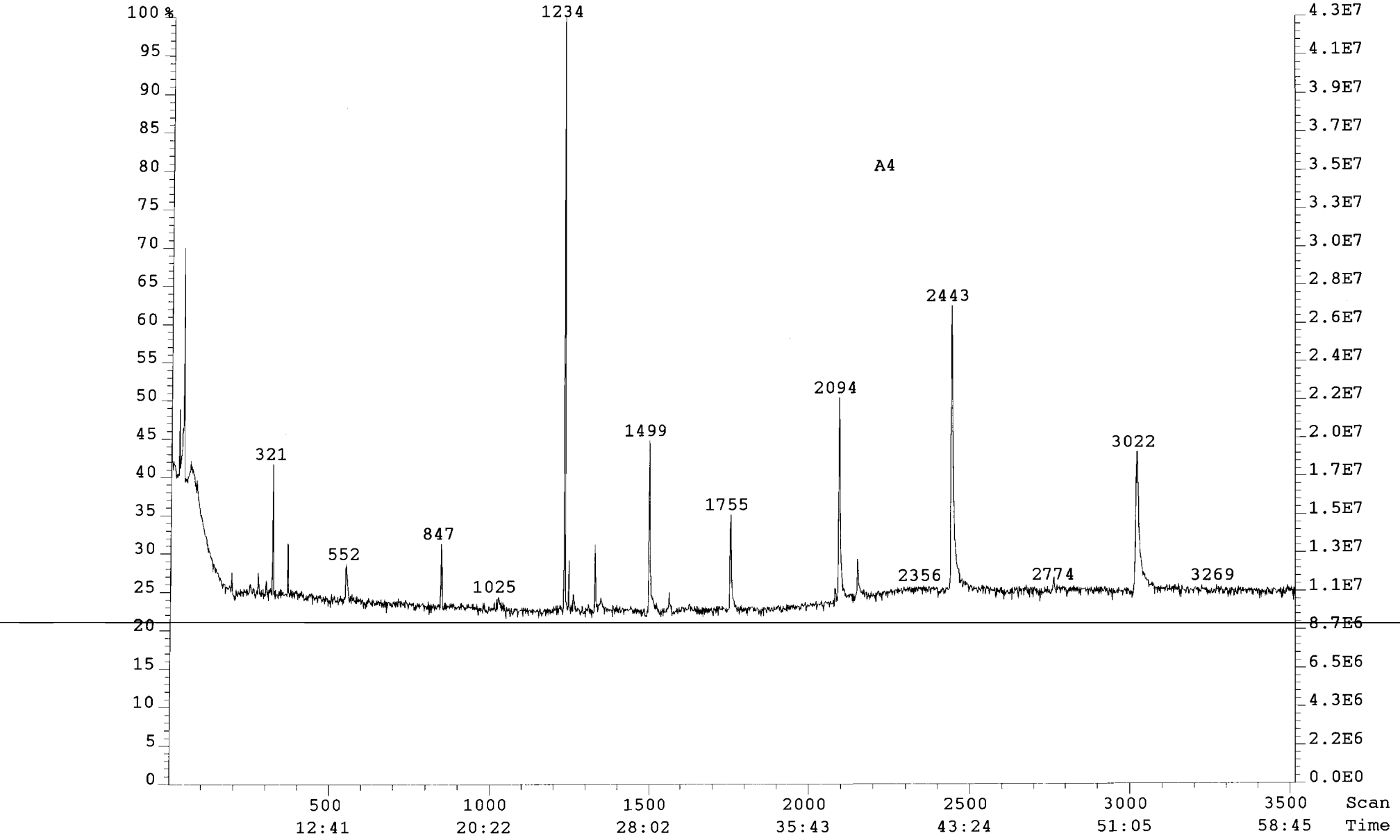
Reported By: H. A. Jones

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 13/5/09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TIC (+RP) S:3 Exp:GENSURVEY
File Text:General Survey
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90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
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10
5
0
4.3E7
4.1E7
3.9E7
3.7E7
3.5E7
3.3E7
3.0E7
2.8E7
2.6E7
2.4E7
2.2E7
2.0E7
1.7E7
1.5E7
1.3E7
1.1E7
8.7E6
6.5E6
4.3E6
2.2E6
0.0E0
A4
1234
2443
2094
1499
3022
321
1755
847
552
1025
2356
2774
3269
500
1000
1500
2000
2500
3000
3500
Scan
12:41
20:22
28:02
35:43
43:24
51:05
58:45
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A4	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	11-Mar-09
Client Reference:	Samples Received 11/03/09	**Data System Code:**	S0070.3	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22724	**Associated Blank:**	S0070.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.60	2.0	I.S.	Internal Standard
0034	Carbon tetrachloride	P	0.14	0.5	Bz	Contaminant
0039	Cyclohexane	P	3.01	10.0	Bz	Contaminant
0191	Toluene	P	0.3	0.4	Cl	Contaminant
0276	Butyl acetate	P	0.25	0.3	Cl	Contaminant
0300	Diacetone alcohol	P	0.21	0.3	Cl	Contaminant
0321	d_5-Chlorobenzene	P	1.46	2.0	I.S.	Internal Standard
0368	d_{10}-p-Xylene	P	0.88	1.0	I.S.	Internal Standard
0552	d_5-Phenol	P	2.03	8.0	I.S.	Internal Standard
0847	d_8-Naphthalene	P	1.27	1.0	I.S.	Internal Standard
1234	d_{20}-BHT	P	7.08	8.0	I.S.	Internal Standard
1248	BHT	P	0.27	0.3	BHT	Test Material
1262	1,6-Dioxacyclododecane-7,12-dione	T	0.51	0.6	BHT	Test Material
1330	d_{34}-Hexadecane	P	1.21	1.0	I.S.	Internal Standard
1499	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.33	2.0	I.S.	Int. Std. + Contaminant
1564	Di-isobutyl phthalate	P	0.54	0.6	BHT	Contaminant
1755	Unknown 42, 71, 41, 43	U	2.87	3.2	BHT	Test Material
2082	Di-(2-ethylhexyl) phthalate	P	0.30	1.4	Sq	Contaminant
2094	Unknown 42, 41, 71, 72	U	6.97	33.2	Sq	Test Material
2152	d_{62}-Squalane	P	1.68	8.0	I.S.	Internal Standard
2443	Unknown 42, 41, 71, 72	U	14.23	67.8	Sq	Test Material
2774	Unknown 113, 69, 41, 39	U	0.51	2.4	Sq	Test Material
3022	Unknown 42, 41, 71, 72	U	11.90	56.7	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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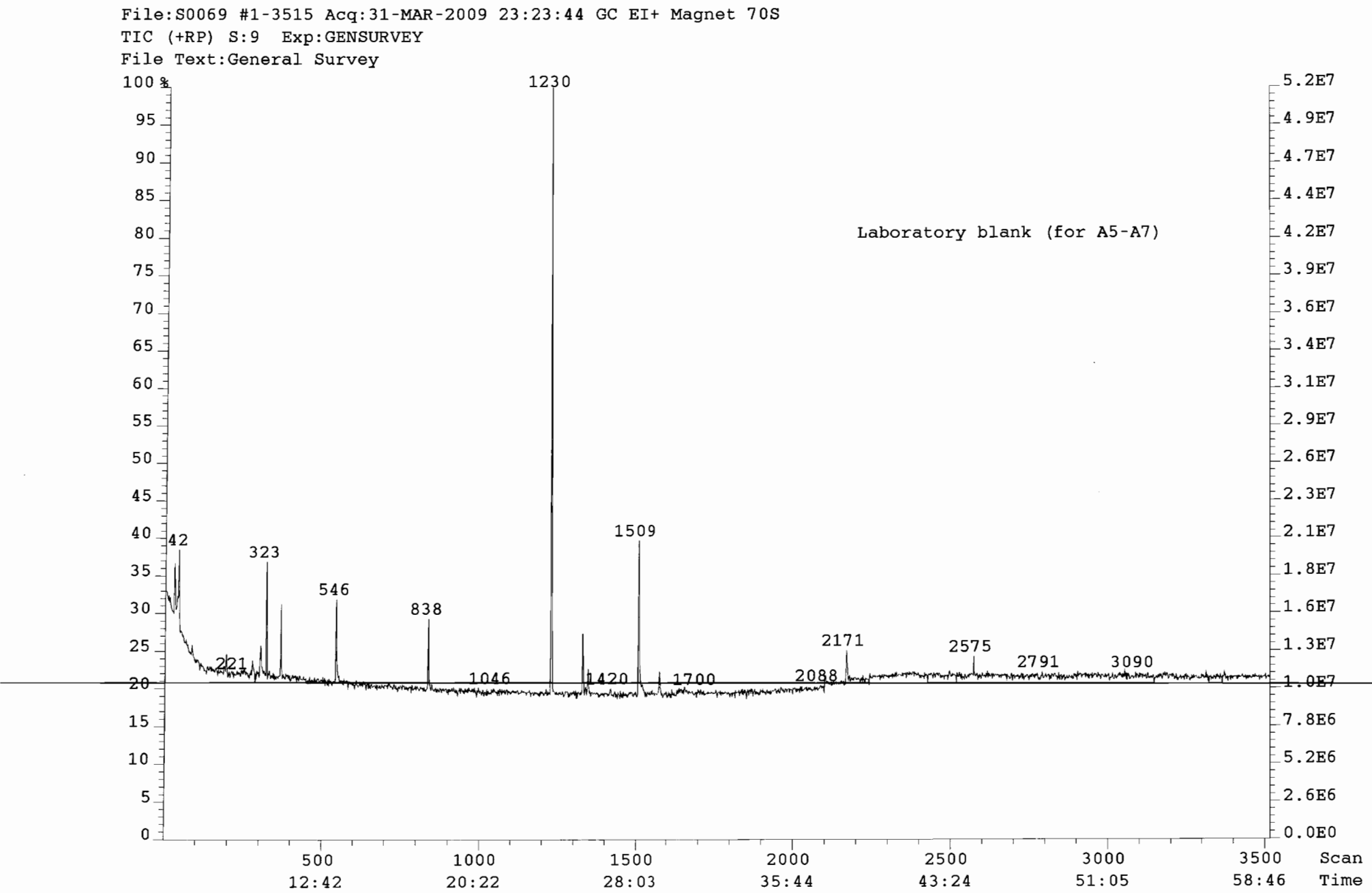
Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 13/5/09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File Text:General Survey
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546
838
2171
2575
2791
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1046
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221
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85
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50
45
40
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30
25
20
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5.2E7
4.9E7
4.7E7
4.4E7
4.2E7
3.9E7
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3.4E7
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2.6E6
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28:03
2000
35:44
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3500
58:46
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	13-Mar-09
Client Reference:	Samples Received 13/03/09	**Data System Code:**	S0069.9	**Date Analysed:**	31-Mar-09
WRc-NSF Reference:	N22727	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0029	d_6-Benzene	P	0.77	2.0	I.S.	Internal Standard
0037	Carbon tetrachloride	P	0.08	0.2	Bz	Contaminant
0042	Cyclohexane	P	1.85	4.8	Bz	Contaminant
0086	1,4-Dioxane	P	0.13	0.3	Bz	Contaminant
0196	Toluene	P	0.48	0.5	Cl	Contaminant
0278	Butyl acetate	P	0.55	0.6	Cl	Contaminant
0304	Diacetone alcohol	P	1.07	1.1	Cl	Contaminant
0323	d_5-Chlorobenzene	P	1.97	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	1.25	1.0	I.S.	Internal Standard
0546	d_5-Phenol	P	2.08	8.0	I.S.	Internal Standard
0838	d_8-Naphthalene	P	1.31	1.0	I.S.	Internal Standard
1230	d_{20}-BHT	P	10.73	8.0	I.S.	Internal Standard
1330	d_{34}-Hexadecane	P	1.30	1.0	I.S.	Internal Standard
1347	Unknown 173, 55, 99, 84	U	0.54	0.4	BHT	Contaminant
1509	d_{10}-Phenanthrene + Tris-(chloropropyl) phosphate isomer	P/T	4.19	2.0	I.S.	Int. Std. + Contaminant
1521	Tris-(chloropropyl) phosphate isomer	T	0.26	0.2	BHT	Contaminant
1577	Di-siobutyl phthalate	P	0.57	0.4	BHT	Contaminant
2101	Di-(2-ethylhexyl) phthalate	P	1.28	8.7	Sq	Contaminant
2171	d_{62}-Squalane	P	1.18	8.0	I.S.	Internal Standard

Internal standards used. Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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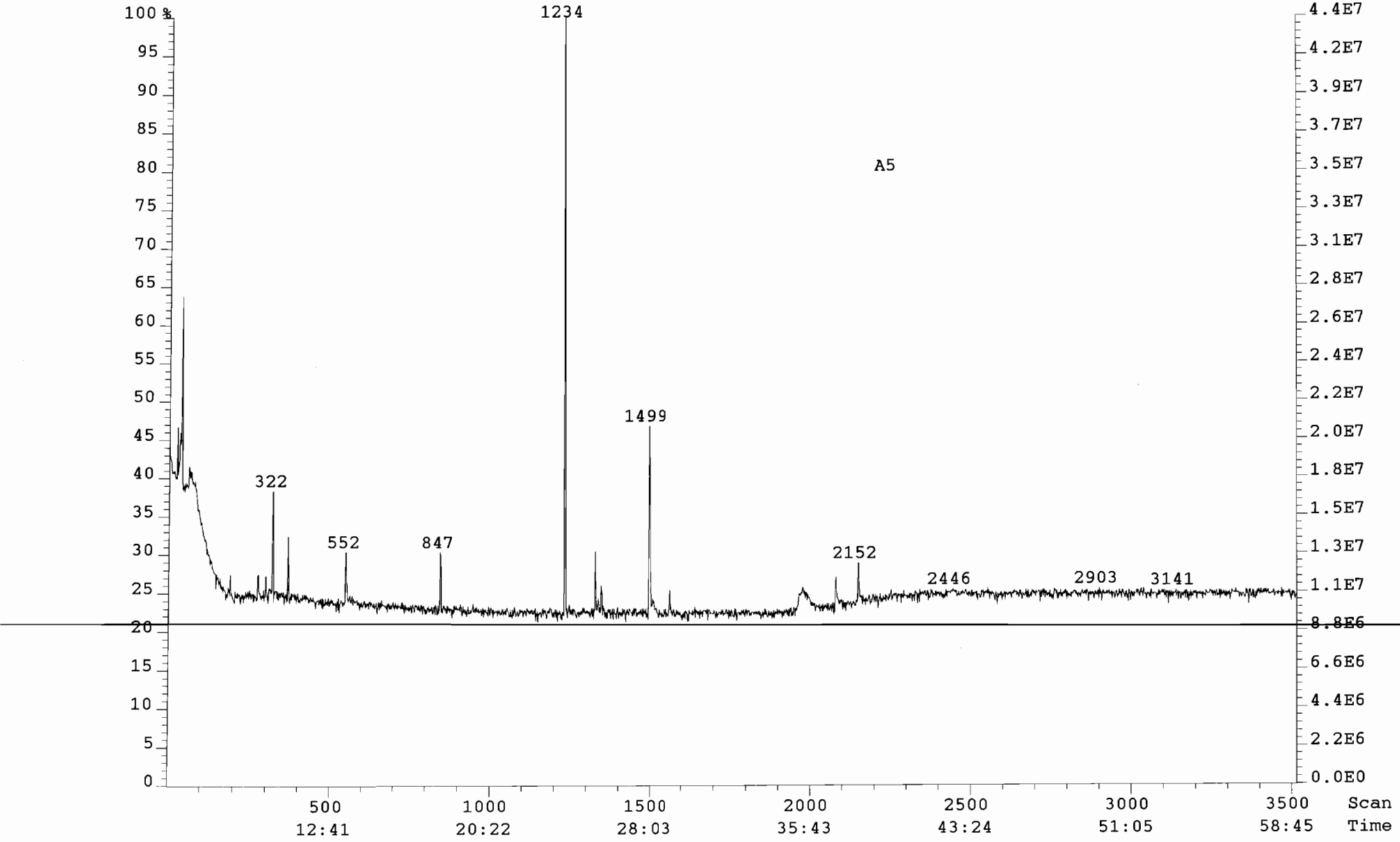
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 19/5/09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TIC (+RP) S:4 Exp:GENSURVEY
File Text:General Survey
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3.1E7
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2.6E7
2.4E7
2.2E7
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28:03
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3000
51:05
3500
58:45
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A5	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	11-Mar-09
Client Reference:	Samples Received 11/03/09	**Data System Code:**	S0070.4	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22724	**Associated Blank:**	S0070.2	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.54	2.0	I.S.	Internal Standard
0033	Carbon tetrachloride	P	0.16	0.6	Bz	Contaminant
0038	Cyclohexane	P	3.01	11.1	Bz	Contaminant
0191	Toluene	P	0.24	0.3	Cl	Contaminant
0276	Butyl acetate	P	0.36	0.5	Cl	Contaminant
0300	Diacetone alcohol	P	0.49	0.6	Cl	Contaminant
0322	d_5-Chlorobenzene	P	1.60	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	0.97	1.0	I.S.	Internal Standard
0552	d_5-Phenol	P	2.01	8.0	I.S.	Internal Standard
0847	d_8-Naphthalene	P	1.28	1.0	I.S.	Internal Standard
1234	d_{20}-BHT	P	8.64	8.0	I.S.	Internal Standard
1248	BHT	P	0.17	0.2	BHT	Test Material
1330	d_{34}-Hexadecane	P	0.89	1.0	I.S.	Internal Standard
1339	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.2	0.2	BHT	Contaminant
1348	Unknown 173, 55, 99, 84	U	0.65	0.6	BHT	Contaminant
1499	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.57	2.0	I.S.	Int. Std. + Contaminant
1510	Tris-(chloropropyl)phosphate isomer	T	0.24	0.2	BHT	Contaminant
1564	Di-isobutyl phthalate	P	0.54	0.5	BHT	Contaminant
1978	Unknown 42, 41, 71, 72 (carry over?)	U	4.75	22.0	Sq	Test Material
2082	Di-(2-ethylhexyl) phthalate	P	1.01	4.7	Sq	Contaminant
2152	d_{62}-Squalane	P	1.73	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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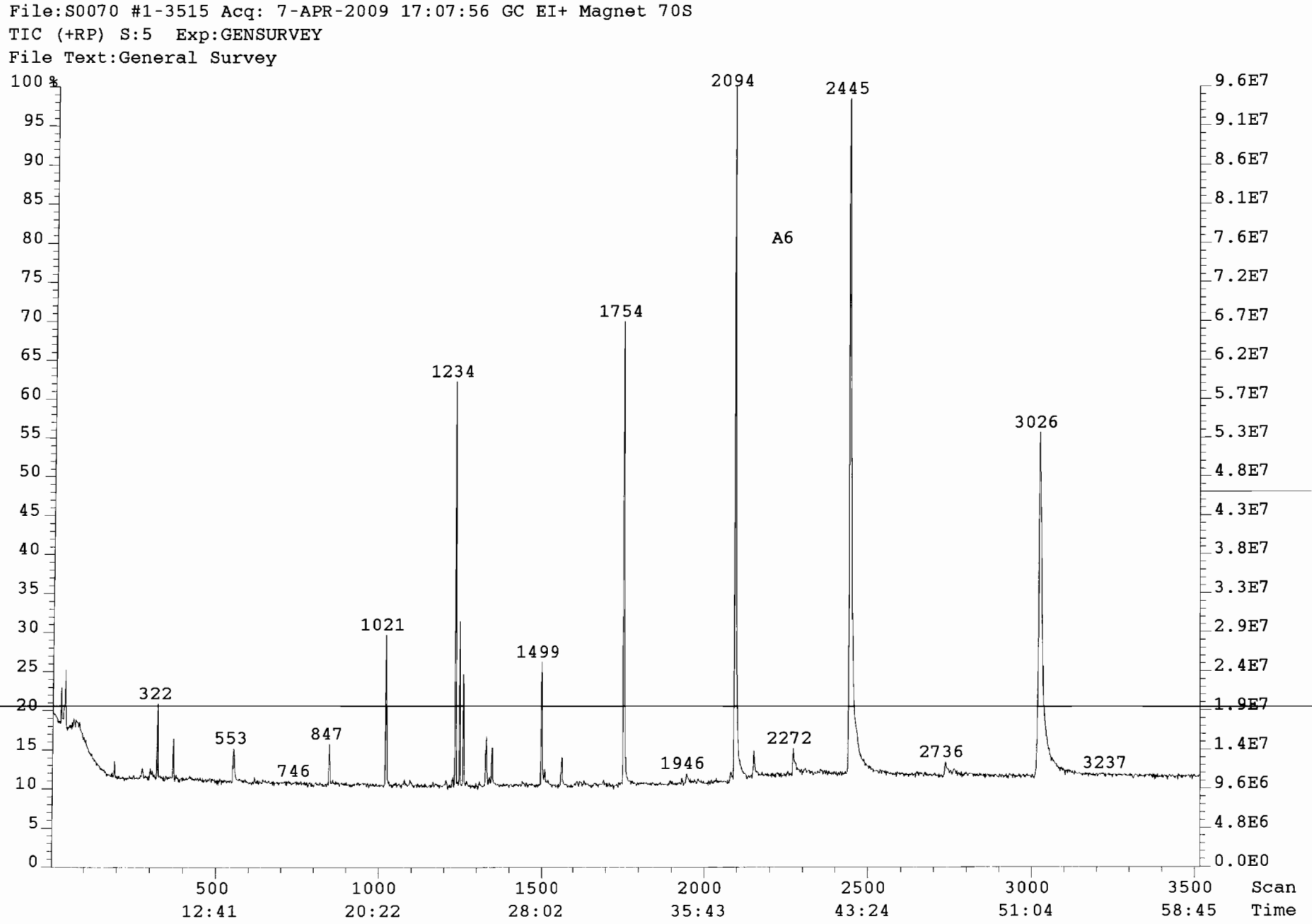
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 18/5/09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58:45
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A6	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	13-Mar-09
Client Reference:	Samples Received 13/03/09	**Data System Code:**	S0070.5	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22727	**Associated Blank:**	S0069.9	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.80	2.0	I.S.	Internal Standard
0034	Carbon tetrachloride	P	2.46	6.2	Bz	Contaminant
0038	Cyclohexane	P			Bz	Contaminant
0192	Toluene	P	0.55	0.5	Cl	Contaminant
0275	Butyl acetate	P	0.60	0.5	Cl	Contaminant
0300	Diacetone alcohol	P	0.79	0.7	Cl	Contaminant
0322	d_5-Chlorobenzene	P	2.21	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	1.22	1.0	I.S.	Internal Standard
0553	d_5-Phenol	P	2.63	8.0	I.S.	Internal Standard
0847	d_8-Naphthalene	P	1.57	1.0	I.S.	Internal Standard
1021	Unknown 101, 42, 54, 27	U	5.41	3.3	BHT	Test Material
1206	4-Methylene-2,6-di-t-butyl-2,5-cyclohexadien-1-one	T	0.39	0.2	BHT	Test Material
1226	Unknown 45, 58, 115, 55	U	0.34	0.2	BHT	Test Material
1234	d_{20}-BHT	P	13.17	8.0	I.S.	Internal Standard
1248	BHT	P	4.32	2.6	BHT	Test Material
1259	1,6-Dioxacyclododecane-7,12-dione	T	3.37	2.0	BHT	Test Material
1329	d_{34}-Hexadecane	P	2.48	1.0	I.S.	Internal Standard
1338	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.28	0.2	BHT	Contaminant
1347	Unknown 173, 55, 99, 84	U	1.32	0.8	BHT	Contaminant
1499	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.74	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.48	0.3	BHT	Contaminant
1563	Di-isobutyl phthalate	P	1.41	0.9	BHT	Contaminant
1754	Unknown 42, 71, 41, 43 [M^+ 288]	U	19.12	11.6	BHT	Test Material
2094	Unknown 42, 41, 71, 39 [M^+ 360]	U	41.16	153.9	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A6	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	13-Mar-09
Client Reference:	Samples Received 13/03/09	**Data System Code:**	S0070.5	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22727	**Associated Blank:**	S0069.9	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2152	d_{62}-Squalane	P	2.14	8.0	I.S.	Internal Standard
2272	Unknown 42, 41, 71, 72	U	2.69	10.1	Sq	Test Material
2445	Unknown 42, 41, 71, 72	U	74.38	278.1	Sq	Test Material
2736	Unknown 42, 41, 71, 72	U	2.06	7.7	Sq	Test Material
3026	Unknown 42, 71, 41, 72 [M* 504]	U	64.43	240.9	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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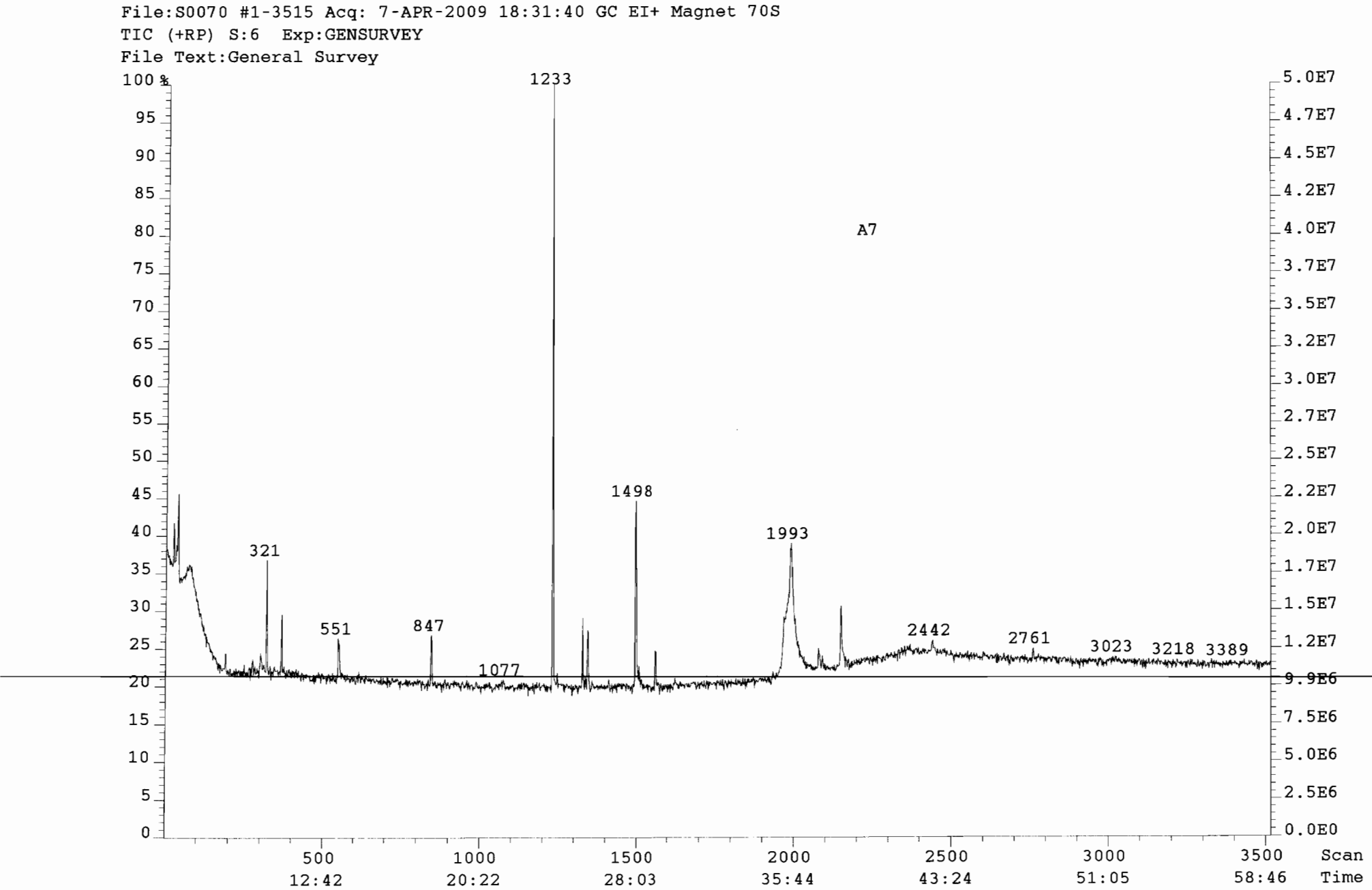
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 19/5/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A7	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	13-Mar-09
Client Reference:	Samples Received 13/03/09	**Data System Code:**	S0070.5	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22727	**Associated Blank:**	S0069.9	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0023	d_6-Benzene	P	0.73	2.0	I.S.	Internal Standard
0032	Carbon tetrachloride	P	1.75	4.8	Bz	Contaminant
0037	Cyclohexane	P			Bz	Contaminant
0191	Toluene	P	0.3	0.3	Cl	Contaminant
0275	Butyl acetate	P	0.37	0.4	Cl	Contaminant
0301	Diacetone alcohol	P	0.75	0.8	Cl	Contaminant
0321	d_5-Chlorobenzene	P	1.92	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	1.01	1.0	I.S.	Internal Standard
0551	d_5-Phenol	P	2.04	8.0	I.S.	Internal Standard
0847	d_8-Naphthalene	P	1.43	1.0	I.S.	Internal Standard
1233	d_{20}-BHT	P	11.28	8.0	I.S.	Internal Standard
1247	BHT	P	0.26	0.2	BHT	Test Material
1329	d_{34}-Hexadecane	P	1.38	1.0	I.S.	Internal Standard
1338	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.28	0.2	BHT	Contaminant
1345	Unknown 173, 55, 99, 84	U	1.69	1.2	BHT	Contaminant
1498	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	5.08	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.25	0.2	BHT	Contaminant
1562	Di-isobutyl phthalate	P	0.97	0.7	BHT	Contaminant
1993	Unknown 42, 41, 71, 72 [M^+ 576] (carry over?)	U	25.37	68.8	Sq	Test Material
2080	Di-(2-ethylhexyl) phthalate	P	0.74	2.0	Sq	Contaminant
2151	d_{62}-Squalane	P	2.95	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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Reported By: H. A. Jones

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 19/5/09

File:S0070 #1-3515 Acq: 7-APR-2009 19:55:40 GC EI+ Magnet 70S
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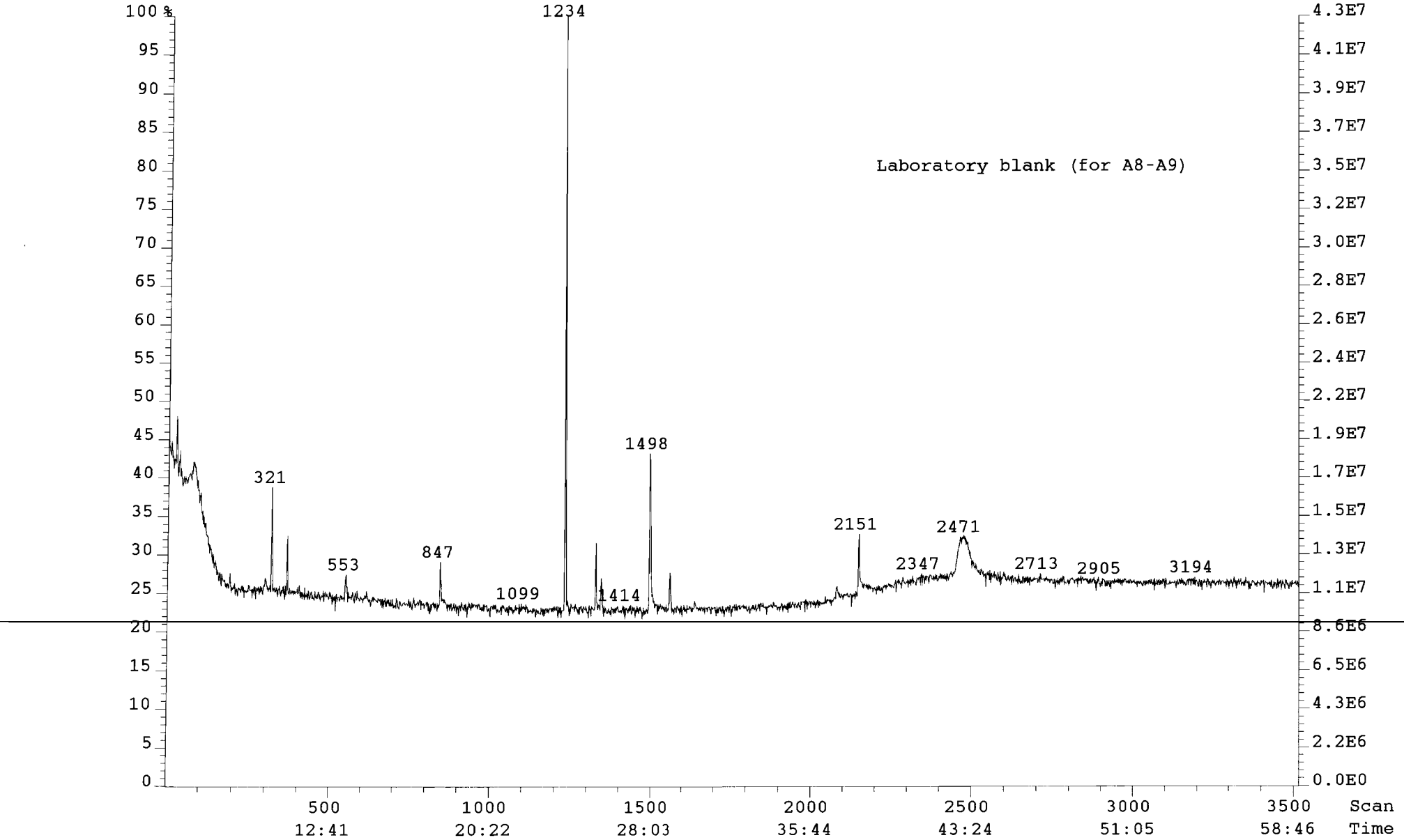
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	16-Mar-09
Client Reference:	Samples Received 16/03/09	**Data System Code:**	S0070.7	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22729	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0023	d_6-Benzene	P	0.70	2.0	I.S.	Internal Standard
0034	2-Chloro-2-methylbutane	P	0.42	1.2	Bz	Contaminant
0300	Diacetone alcohol	P	0.54	0.7	Cl	Contaminant
0321	d_5-Chlorobenzene	P	1.47	2.0	I.S.	Internal Standard
0369	d_{10}-p-Xylene	P	0.89	1.0	I.S.	Internal Standard
0553	d_5-Phenol	P	1.44	8.0	I.S.	Internal Standard
0847	d_8-Naphthalene	P	1.26	1.0	I.S.	Internal Standard
1234	d_{20}-BHT	P	9.53	8.0	I.S.	Internal Standard
1329	d_{34}-Hexadecane	P	1.10	1.0	I.S.	Internal Standard
1346	Unknown 173, 55, 99, 84	U	0.63	0.5	BHT	Contaminant
1498	d_{10}-Phenanthrene + Tris-(chloropropyl) phosphate isomer	P/T	4.17	2.0	I.S.	Int. Std. + Contaminant
1508	Tris-(chloropropyl) phosphate isomer	T	0.10	0.1	BHT	Contaminant
1563	Di-siobutyl phthalate	P	0.93	0.8	BHT	Contaminant
2080	Di-(2-ethylhexyl) phthalate	P	0.69	2.4	Sq	Contaminant
2151	d_{62}-Squalane	P	2.30	8.0	I.S.	Internal Standard
2471	Unknown 42, 41, 71, 72 (carry over?)	U	11.81	41.1	Sq	Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 28/5/09

File:S0070 #1-3515 Acq: 7-APR-2009 22:43:43 GC EI+ Magnet 70S
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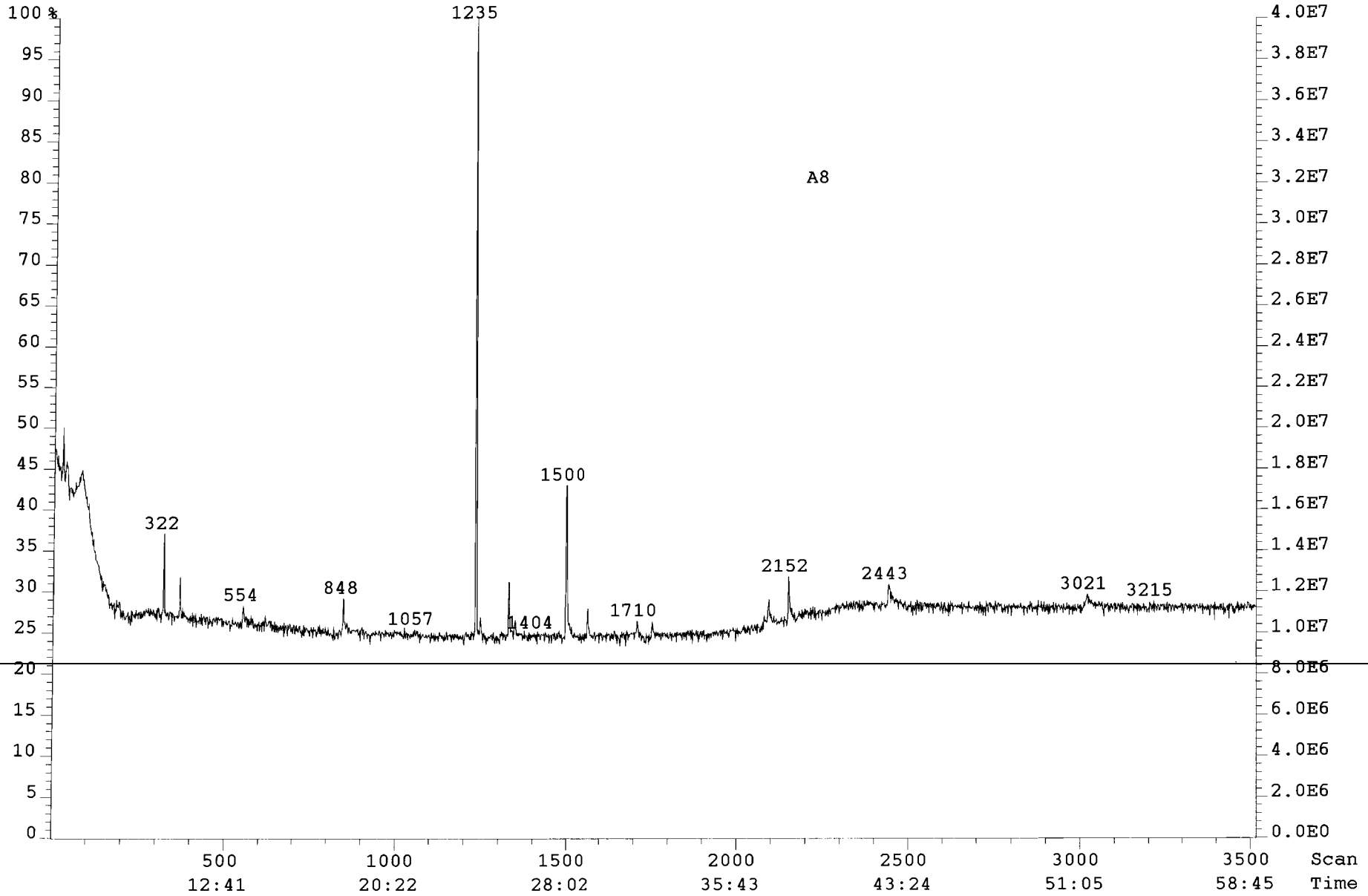
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A8	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	16-Mar-09
Client Reference:	Samples Received 16/03/09	**Data System Code:**	S0070.9	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22729	**Associated Blank:**	S0070.7	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0024	d_6-Benzene	P	0.80	2.0	I.S.	Internal Standard
0033	Carbon tetrachloride	P	2.46	6.2	Bz	Contaminant
0035	2-Chloro-2-methylbutane	T				Contaminant
0038	Cyclohexane	P				Contaminant
0322	d_5-Chlorobenzene	P	1.23	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.63	1.0	I.S.	Internal Standard
0554	d_5-Phenol	P	1.14	8.0	I.S.	Internal Standard
0848	d_8-Naphthalene	P	1.08	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	8.56	8.0	I.S.	Internal Standard
1248	BHT	P	0.22	0.2	BHT	Test Material
1330	d_{34}-Hexadecane	P	0.9	1.0	I.S.	Internal Standard
1349	Unknown 173, 55, 99, 84	U	0.39	0.4	BHT	Contaminant
1500	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	3.67	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.16	0.1	BHT	Contaminant
1564	Di-isobutyl phthalate	P	0.80	0.7	BHT	Contaminant
1710	Sulphur (S_8)	U	0.33	0.3	BHT	Test Material
1754	Unknown 42, 71, 41, 55	U	0.36	1.5	Sq	Test Material
2081	Di-(2-ethylhexyl) phthalate	P	0.31	1.3	Sq	Contaminant
2095	Unknown 42, 41, 71, 39	U	0.79	3.3	Sq	Test Material
2152	d_{62}-Squalane	P	1.90	8.0	I.S.	Internal Standard
2443	Unknown 42, 71, 41, 72	U	1.11	4.7	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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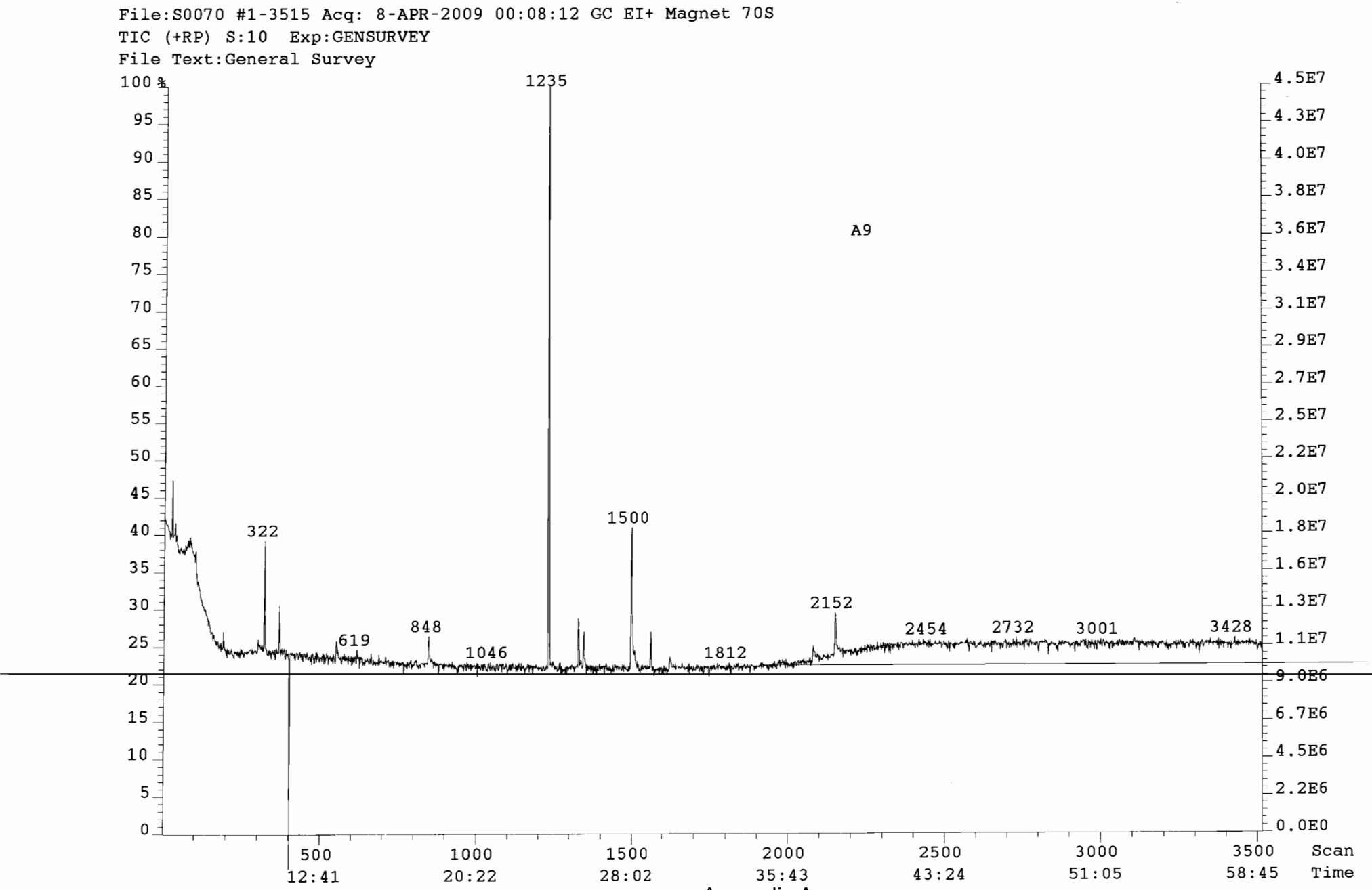
Reported By: H. A. Jarvis

Authorised By: J. Dunning
Laboratory Manager

Date: 28/5/09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Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A9	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	16-Mar-09
Client Reference:	Samples Received 16/03/09	**Data System Code:**	S0070.10	**Date Analysed:**	07-Apr-09
WRc-NSF Reference:	N22729	**Associated Blank:**	S0070.7	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0024	d_6-Benzene	P	0.63	2.0	I.S.	Internal Standard
0035	2-Chloro-2-methylbutane	T	0.24	0.8	Bz	Contaminant
0191	Toluene	P	0.29	0.4	Cl	Contaminant
0322	d_5-Chlorobenzene	P	1.49	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.86	1.0	I.S.	Internal Standard
0552	d_5-Phenol	P	0.99	8.0	I.S.	Internal Standard
0848	d_8-Naphthalene	P	0.90	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	9.38	8.0	I.S.	Internal Standard
1330	d_{34}-Hexadecane	P	0.86	1.0	I.S.	Internal Standard
1347	Unknown 173, 55, 99, 84	U	1.18	1.0	BHT	Contaminant
1500	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.80	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.16	0.1	BHT	Contaminant
1564	Di-isobutyl phthalate	P	0.82	0.7	BHT	Contaminant
1625	2-Phenyltridecane	T	0.40	0.3	BHT	Contaminant
2082	Di-(2-ethylhexyl) phthalate	P	0.90	3.9	Sq	Contaminant
2152	d_{62}-Squalane	P	1.84	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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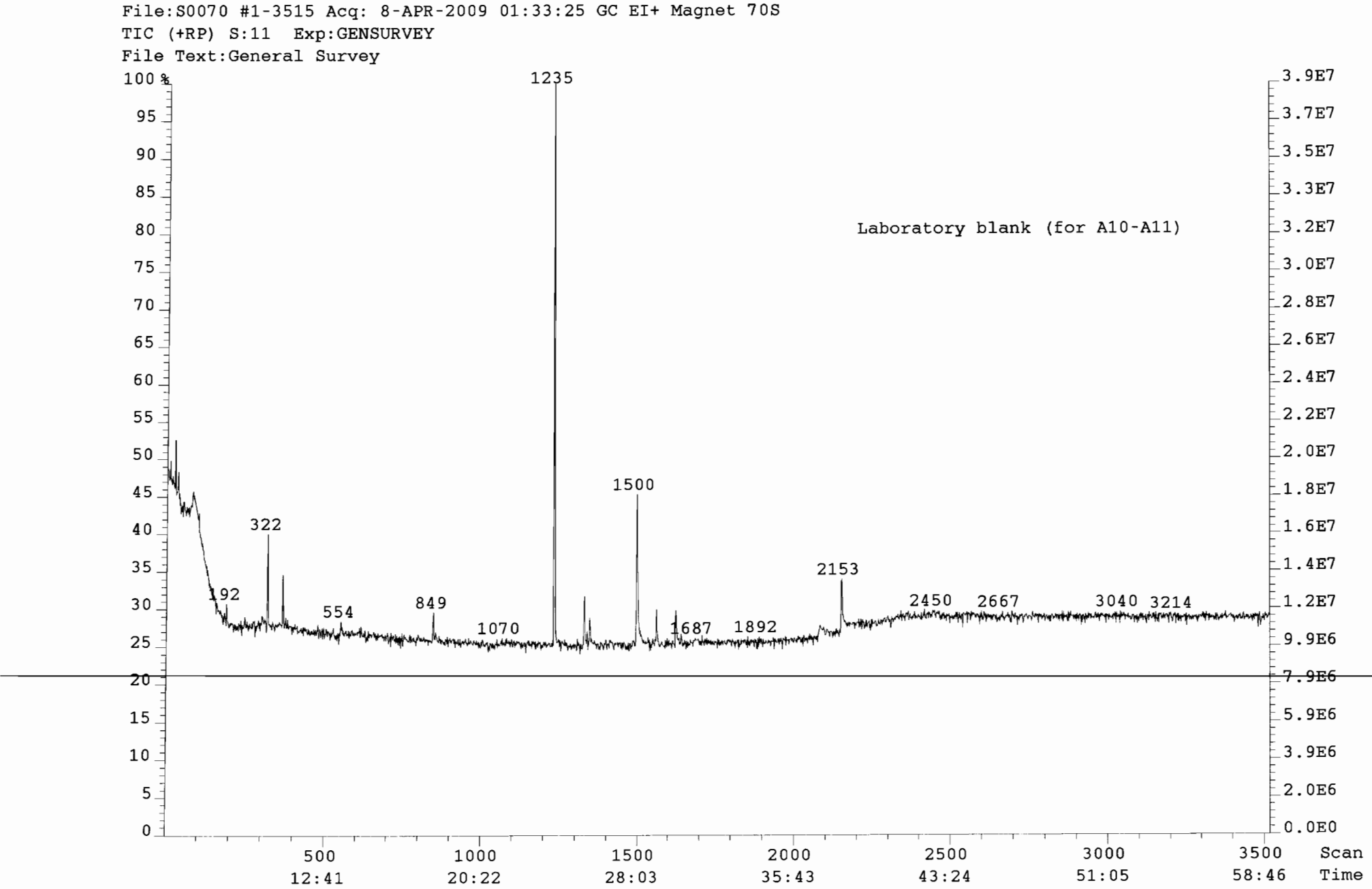
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 28/5/09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Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	19-Mar-09
Client Reference:	Samples Received 19/03/09	**Data System Code:**	S0070.11	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22732	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0009	2-Methyl-1,3-dioxolane	T	0.10	0.3	Bz	Contaminant
0025	d_6-Benzene	P	0.65	2.0	I.S.	Internal Standard
0033	Carbon tetrachloride	P	0.35	1.1	Bz	Contaminant
0035	2-Chloro-2-methylbutane	P				Contaminant
0192	Toluene	P	0.37	0.5	Cl	Contaminant
0322	d_5-Chlorobenzene	P	1.36	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.70	1.0	I.S.	Internal Standard
0554	d_5-Phenol	P	1.38	8.0	I.S.	Internal Standard
0849	d_8-Naphthalene	P	1.06	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	8.39	8.0	I.S.	Internal Standard
1331	d_{34}-Hexadecane	P	0.84	1.0	I.S.	Internal Standard
1339	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate		0.21	0.2	BHT	Contaminant
1348	Unknown 173, 55, 99, 84	U	0.59	0.6	BHT	Contaminant
1500	d_{10}-Phenanthrene + Tris-(chloropropyl) phosphate isomer	P/T	4.00	2.0	I.S.	Int. Std. + Contaminant
1564	Di-siobutyl phthalate	P	0.93	0.9	BHT	Contaminant
1626	2-Phenyltridecane	T	0.64	0.6	BHT	Contaminant
2082	Di-(2-ethylhexyl) phthalate	P	0.88	3.9	Sq	Contaminant
2153	d_{62}-Squalane	P	1.82	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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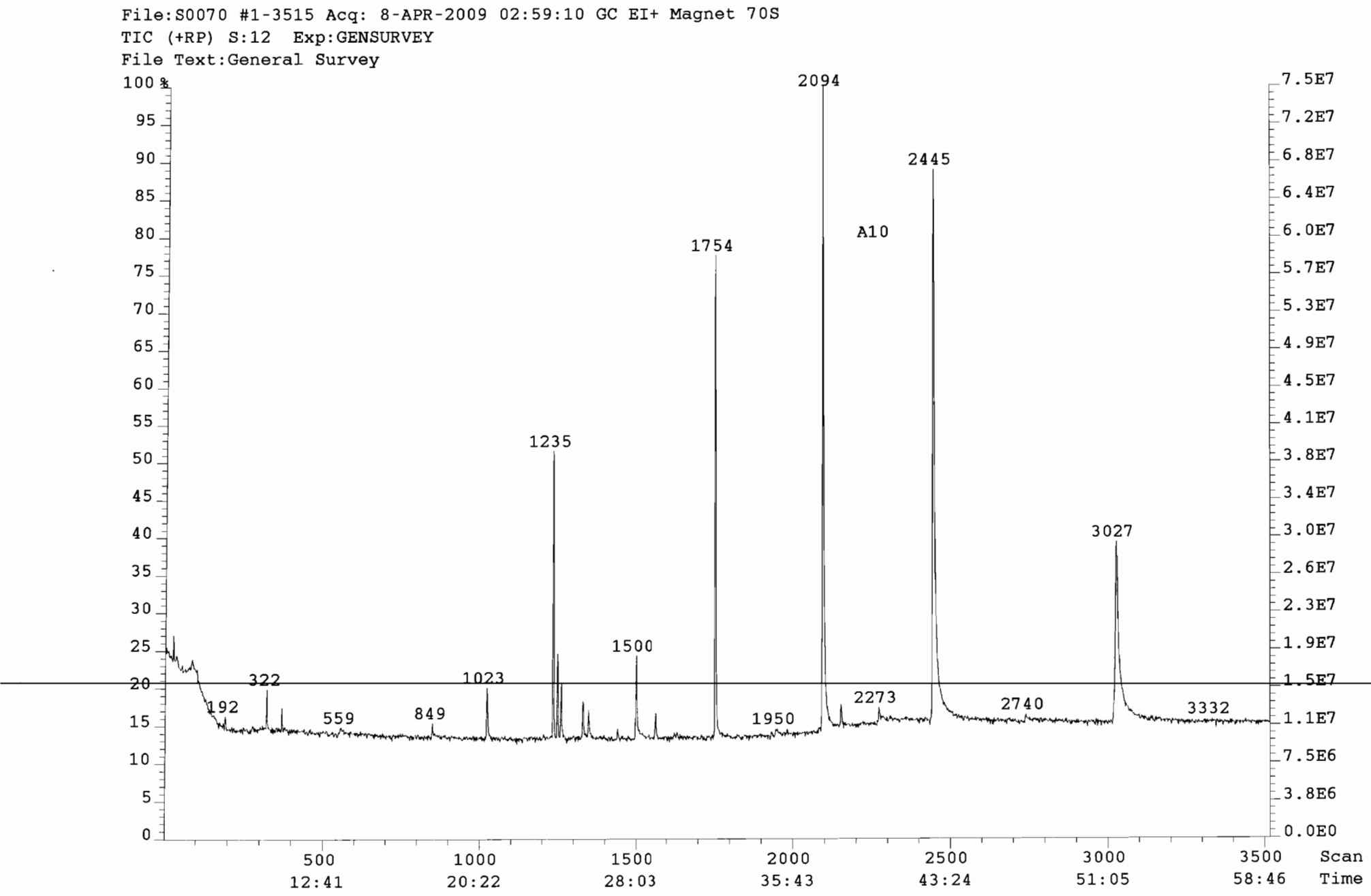
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 2/6/09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28:03
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2500
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Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A10	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	19-Mar-09
Client Reference:	Samples Received 19/03/09	**Data System Code:**	S0070.12	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22732	**Associated Blank:**	S0070.11	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0024	d_6-Benzene	P	0.60	2.0	I.S.	Internal Standard
0033	Carbon tetrachloride	P	0.35	1.2	Bz	Contaminant
0035	2-Chloro-2-methylbutane	T				Contaminant
0038	Cyclohexane	P				Contaminant
0192	Toluene	P	0.51	1.7	Bz	Contaminant
0322	d_5-Chlorobenzene	P	1.06	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.62	1.0	I.S.	Internal Standard
0557	d_5-Phenol	P	1.49	8.0	I.S.	Internal Standard
0849	d_8-Naphthalene	P	1.28	1.0	I.S.	Internal Standard
1023	Unknown 101, 42, 54, 55	U	2.35	2.2	BHT	Test Material
1235	d_{20}-BHT	P	8.50	8.0	I.S.	Internal Standard
1249	BHT	P	2.13	2.0	BHT	Test Material
1261	1,6-Dioxacyclododecane-7,12-dione	T	1.92	1.8	BHT	Test Material
1330	d_{34}-Hexadecane	P	1.7	1.0	I.S.	Internal Standard
1348	Unknown 173, 55, 99, 84	U	1.33	1.3	BHT	Contaminant
1440	Unknown 55, 101, 42, 41	U	0.30	0.3	BHT	Test Material
1500	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.03	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.14	0.1	BHT	Contaminant
1564	Di-isobutyl phthalate	P	1.01	1.0	BHT	Contaminant
1754	Unknown 71, 42, 41, 55 [M^+ 288]	U	16.22	122.4	Sq	Test Material
2094	Unknown 42, 71, 41, 55 [M^+ 360]	U	31.29	236.2	Sq	Test Material
2152	d_{62}-Squalane	P	1.06	8.0	I.S.	Internal Standard
2445	Unknown 42, 41, 71, 72 [M^+ 432]	U	45.79	345.6	Sq	Test Material
3027	Unknown 42, 71, 41, 72 [M^+ 504]	U	31.46	237.4	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

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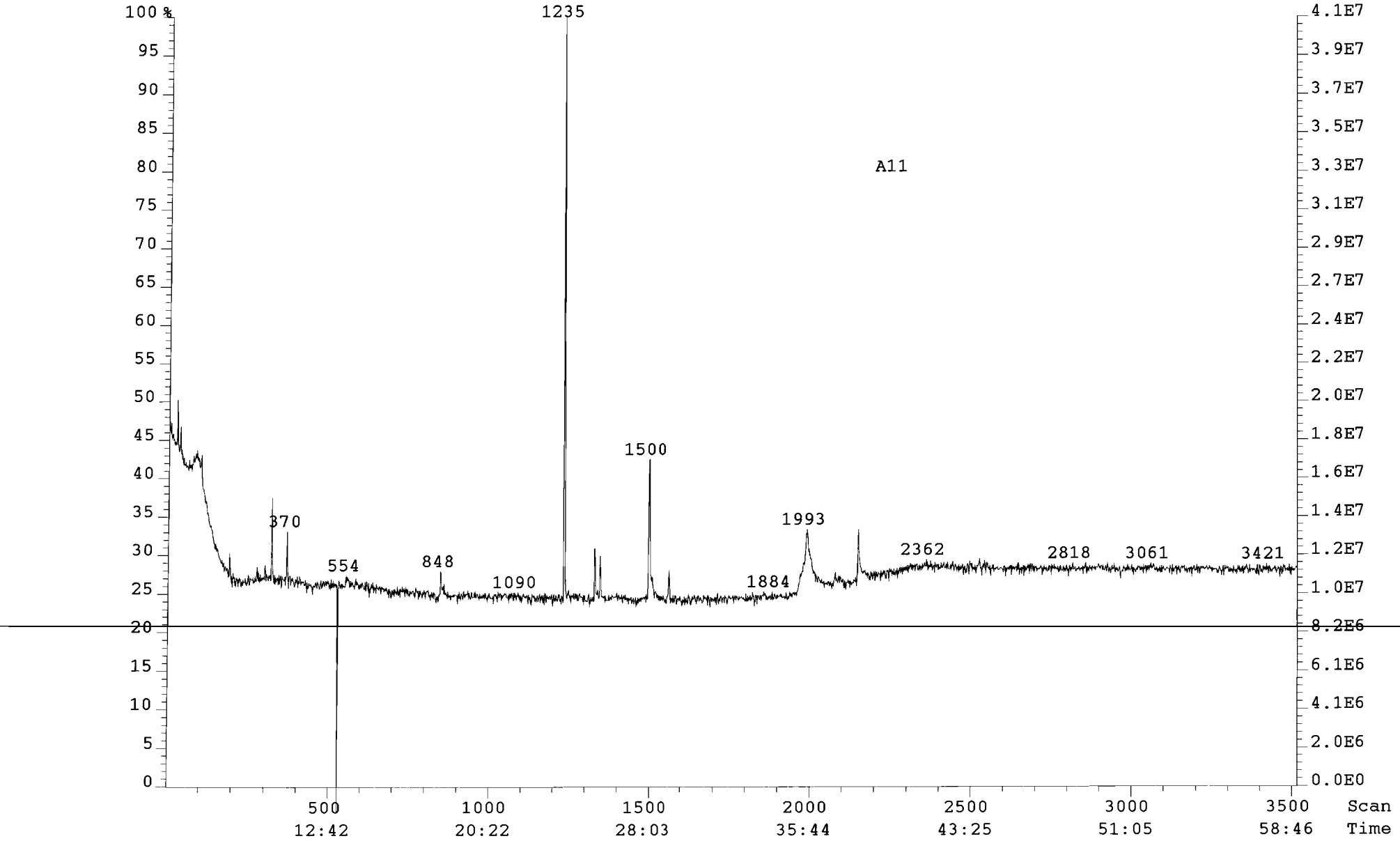
Reported By: H. A. James

Authorised By: John Dunning
J. Dunning
Laboratory Manager

Date: 2/6/09

File:S0070 #1-3515 Acq: 8-APR-2009 04:24:02 GC EI+ Magnet 70S
TIC (+RP) S:13 Exp:GENSURVEY
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A11	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	19-Mar-09
Client Reference:	Samples Received 19/03/09	**Data System Code:**	S0070.13	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22732	**Associated Blank:**	S0070.11	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.63	2.0	I.S.	Internal Standard
0033	Carbon tetrachloride	P	0.27	0.9	Bz	Contaminant
0035	2-Chloro-2-methylbutane	T			Bz	Contaminant
0192	Toluene	P	0.4	0.6	Cl	Contaminant
0322	d_5-Chlorobenzene	P	1.25	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.80	1.0	I.S.	Internal Standard
0555	d_5-Phenol	P	1.40	8.0	I.S.	Internal Standard
0848	d_8-Naphthalene	P	1.08	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	8.54	8.0	I.S.	Internal Standard
1331	d_{34}-Hexadecane	P	0.65	1.0	I.S.	Internal Standard
1347	Unknown 173, 55, 99, 84	U	0.77	0.7	BHT	Contaminant
1500	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.52	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.11	0.1	BHT	Contaminant
1564	Di-isobutyl phthalate	P	0.71	0.7	BHT	Contaminant
1983	Unknown 42, 71, 41, 72 (carry over?)	U	7.57	20.9	Sq	Contaminant
2152	d_{62}-Squalane	P	2.90	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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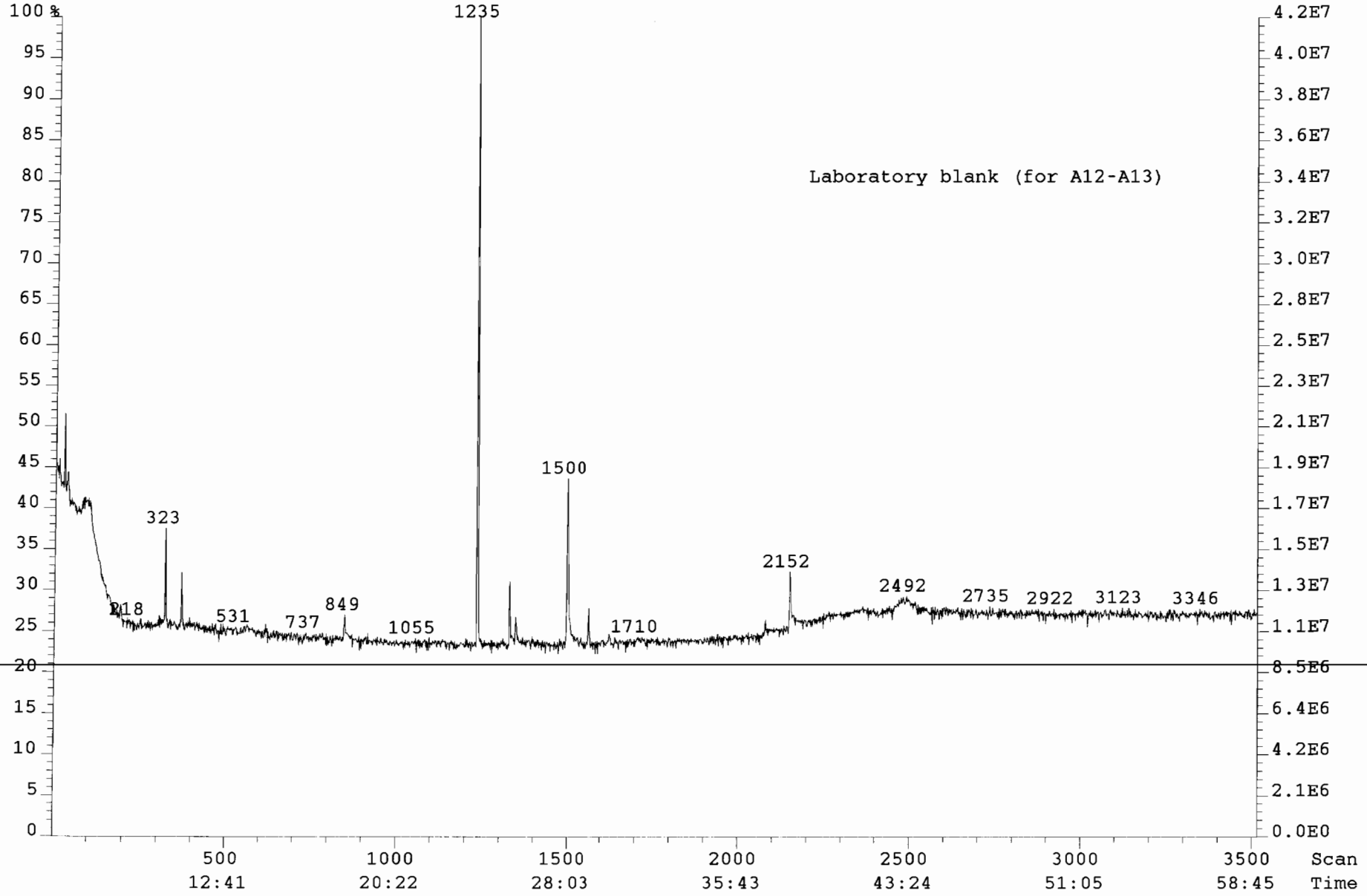
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 3/6/09

File:S0070 #1-3515 Acq: 8-APR-2009 05:48:28 GC EI+ Magnet 70S
TIC (+RP) S:14 Exp:GENSURVEY
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	24-Mar-09
Client Reference:	Samples Received 24/03/09	**Data System Code:**	S0070.14	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22734	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.68	2.0	I.S.	Internal Standard
0034	Carbon tetrachloride	P	0.23	0.7	Bz	Contaminant
0036	2-Chloro-2-methylbutane	P				Contaminant
0192	Toluene	P	0.19	0.3	Cl	Contaminant
0323	d_5-Chlorobenzene	P	1.39	2.0	I.S.	Internal Standard
0371	d_{10}-p-Xylene	P	0.76	1.0	I.S.	Internal Standard
0555	d_5-Phenol	P	2.02	8.0	I.S.	Internal Standard
0849	d_8-Naphthalene	P	1.28	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	9.76	8.0	I.S.	Internal Standard
1331	d_{34}-Hexadecane	P	1.07	1.0	I.S.	Internal Standard
1348	Unknown 173, 55, 99, 84	U	0.70	0.6	BHT	Contaminant
1500	d_{10}-Phenanthrene + Tris-(chloropropyl) phosphate isomer	P/T	4.43	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl) phosphate isomer	T	0.12	0.1	BHT	Contaminant
1564	Di-isobutyl phthalate	P	0.68	0.6	BHT	Contaminant
2081	Di-(2-ethylhexyl) phthalate	P	0.30	1.4	Sq	Contaminant
2152	d_{62}-Squalane	P	1.75	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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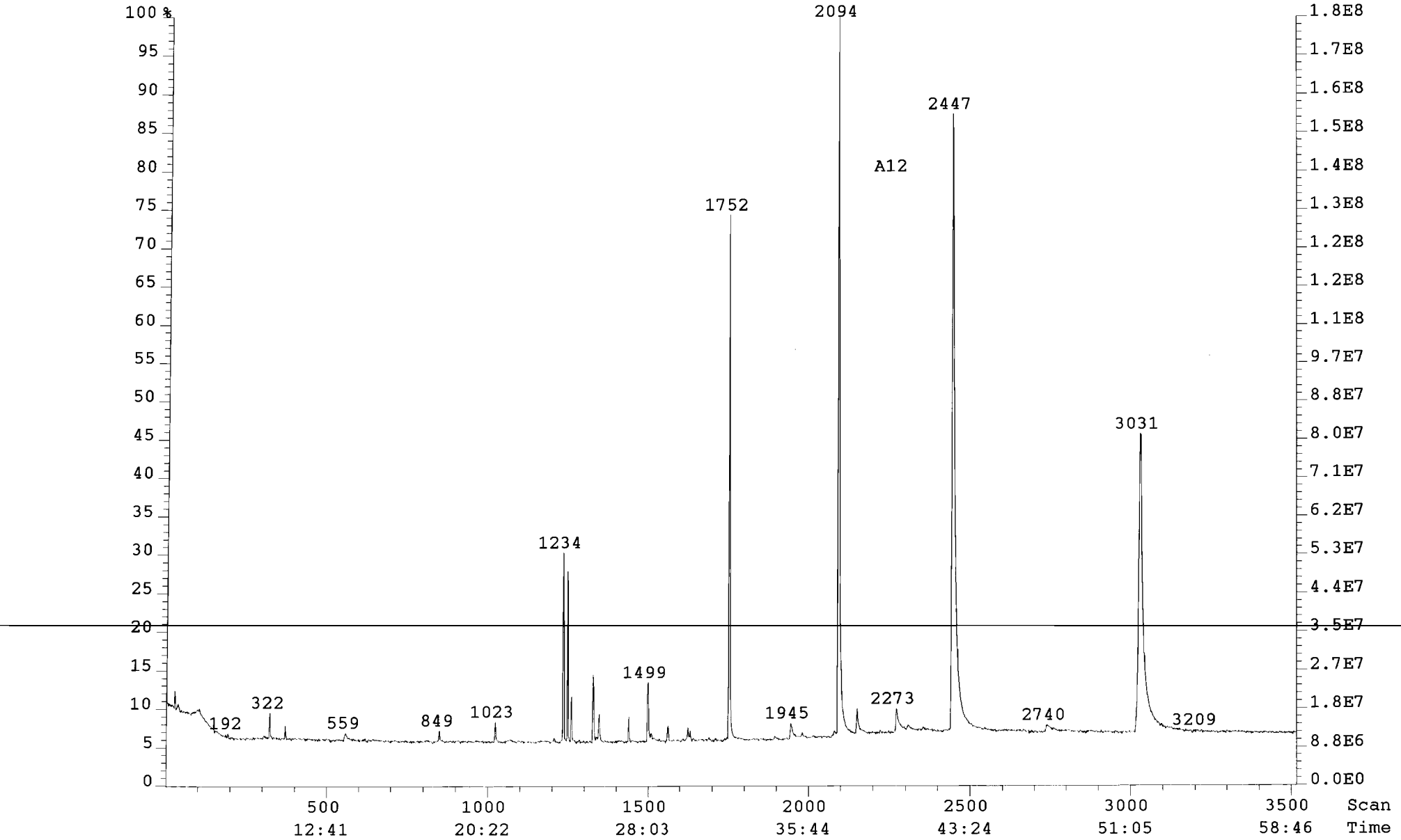
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 3/6/09

File:S0070 #1-3515 Acq: 8-APR-2009 08:39:29 GC EI+ Magnet 70S
TIC (+RP) S:16 Exp:GENSURVEY
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A12	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	19-Mar-09
Client Reference:	Samples Received 19/03/09	**Data System Code:**	S0070.16	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22732	**Associated Blank:**	S0070.14	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.93	2.0	I.S.	Internal Standard
0034	Carbon tetrachloride	P	0.86	1.8	Bz	Contaminant
0036	2-Chloro-2-methylbutane	T				Contaminant
0039	Cyclohexane	P				Contaminant
0322	d_5-Chlorobenzene	P	1.57	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.92	1.0	I.S.	Internal Standard
0559	d_5-Phenol	P	2.38	8.0	I.S.	Internal Standard
0849	d_8-Naphthalene	P	1.43	1.0	I.S.	Internal Standard
1023	Unknown 101, 42, 54, 55	U	2.20	1.3	BHT	Test Material
1234	d_{20}-BHT	P	13.28	8.0	I.S.	Internal Standard
1248	BHT	P	10.50	6.3	BHT	Test Material
1260	1,6-Dioxacyclododecane-7,12-dione	T	3.16	1.9	BHT	Test Material
1327	Unknown 71, 55, 41, 43	U	5.67	3.4	BHT	Test Material
1329	d_{34}-Hexadecane	P			I.S.	Internal Standard
1347	Unknown 173, 55, 99, 84	U	2.55	1.5	BHT	Contaminant
1439	Unknown 55, 101, 42, 41	U	1.67	1.0	BHT	Test Material
1499	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	6.72	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.47	0.3	BHT	Contaminant
1563	Di-isobutyl phthalate	P	1.37	0.8	BHT	Contaminant
1624	2-Phenyltridecane	T	0.92	0.6	BHT	Contaminant
1632	Methyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate	T	0.47	0.3	BHT	Test Material
1752	Unknown 71, 42, 55, 41 [M^+ 288]	U	46.14	88.7	Sq	Test Material
1945	Unknown 42, 41, 71, 43	U	3.04	5.8	Sq	Test Material
2094	Unknown 71, 42, 41, 55 [M^+ 360]	U	91.44	175.8	Sq	Test Material
2151	d_{62}-Squalane	P	4.16	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A12	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	19-Mar-09
Client Reference:	Samples Received 19/03/09	**Data System Code:**	S0070.16	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22732	**Associated Blank:**	S0070.14	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2273	Unknown 42, 41, 71, 73	U	6.69	12.9	Sq	Test Material
2447	Unknown 42, 41, 71, 72 [M^+ 432]	U	153.00	294.2	Sq	Test Material
3031	Unknown 42, 41, 71, 39 [M^+ 504]	U	112.10	215.6	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

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Reported By: H. A. Jones

Authorised By: John Dunning
J. Dunning
Laboratory Manager

Date: 9/6/09

File:S0070 #1-3515 Acq: 8-APR-2009 10:04:33 GC EI+ Magnet 70S
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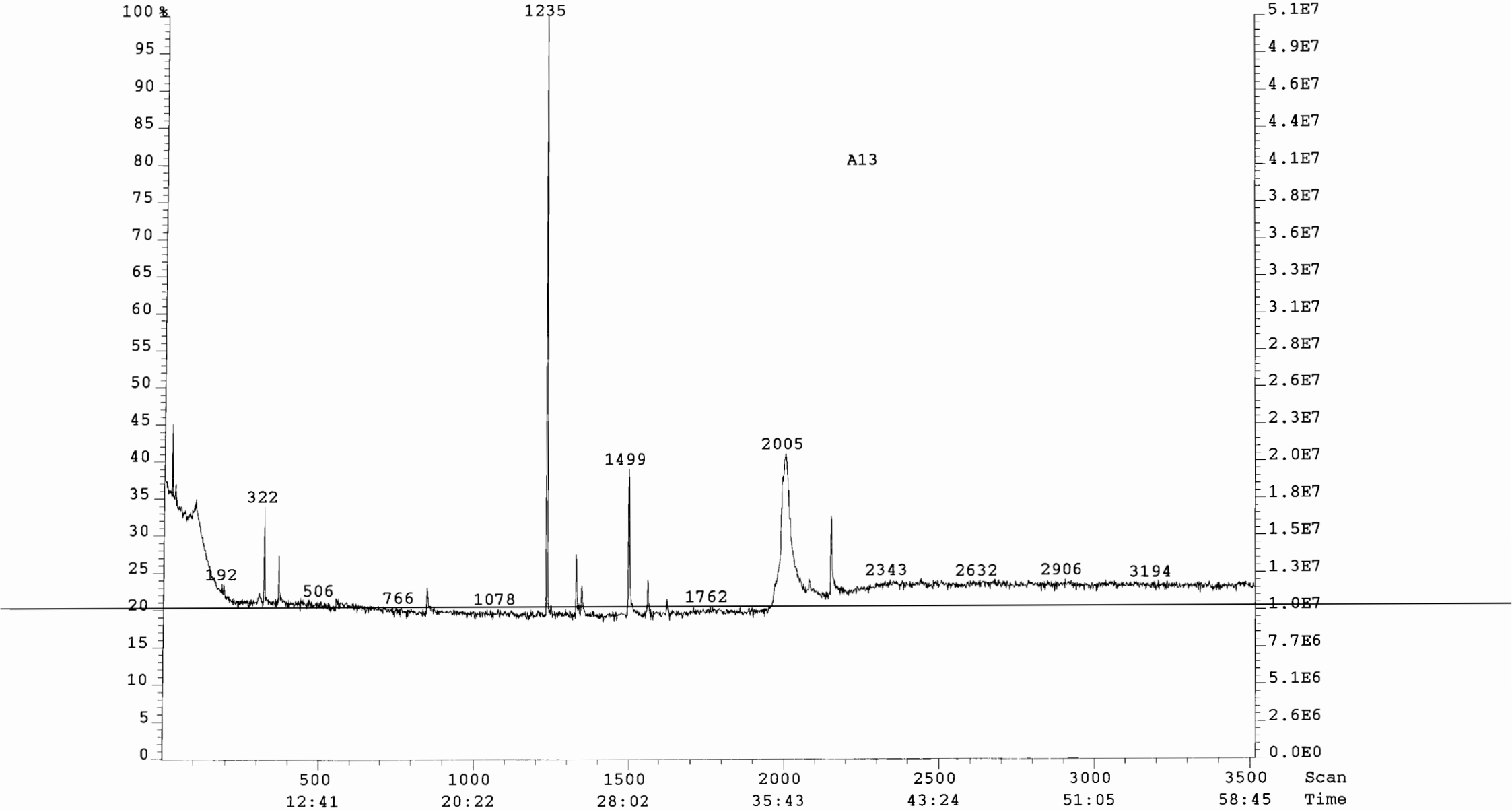

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A13	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	19-Mar-09
Client Reference:	Samples Received 19/03/09	**Data System Code:**	S0070.17	**Date Analysed:**	08-Apr-09
WRc-NSF Reference:	N22732	**Associated Blank:**	S0070.14	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0025	d_6-Benzene	P	0.83	2.0	I.S.	Internal Standard
0036	2-Chloro-2-methylbutane	T	0.36	0.9	Bz	Contaminant
0192	Toluene	P	0.19	0.2	Cl	Contaminant
0305	Diacetone alcohol	P	0.41	0.5	Cl	Contaminant
0322	d_5-Chlorobenzene	P	1.61	2.0	I.S.	Internal Standard
0370	d_{10}-p-Xylene	P	0.89	1.0	I.S.	Internal Standard
0556	d_5-Phenol	P	1.86	8.0	I.S.	Internal Standard
0849	d_8-Naphthalene	P	1.34	1.0	I.S.	Internal Standard
1235	d_{20}-BHT	P	11.59	8.0	I.S.	Internal Standard
1249	BHT	P	0.26	0.2	BHT	Test Material
1330	d_{34}-Hexadecane	P	1.37	1.0	I.S.	Internal Standard
1338	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.2	0.1	BHT	Contaminant
1348	Unknown 173, 55, 99, 84	U	1.29	0.9	BHT	Contaminant
1499	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.33	2.0	I.S.	Int. Std. + Contaminant
1509	Tris-(chloropropyl)phosphate isomer	T	0.11	0.1	BHT	Contaminant
1563	Di-isobutyl phthalate	P	0.71	0.5	BHT	Contaminant
1614	2-Phenyltridecane	T	0.41	0.3	BHT	Contaminant
2005	Unknown 42, 41, 71, 72 (carry over?)	U	40.78	92.9	Sq	Test Material
2081	D--(2-ethylhexyl) phthalate	P	0.68	1.5	Sq	Contaminant
2152	d_{62}-Squalane	P	3.51	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

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Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 9/6/09

File:S0074 #1-3488 Acq: 4-JUN-2009 01:56:55 GC EI+ Magnet 70S
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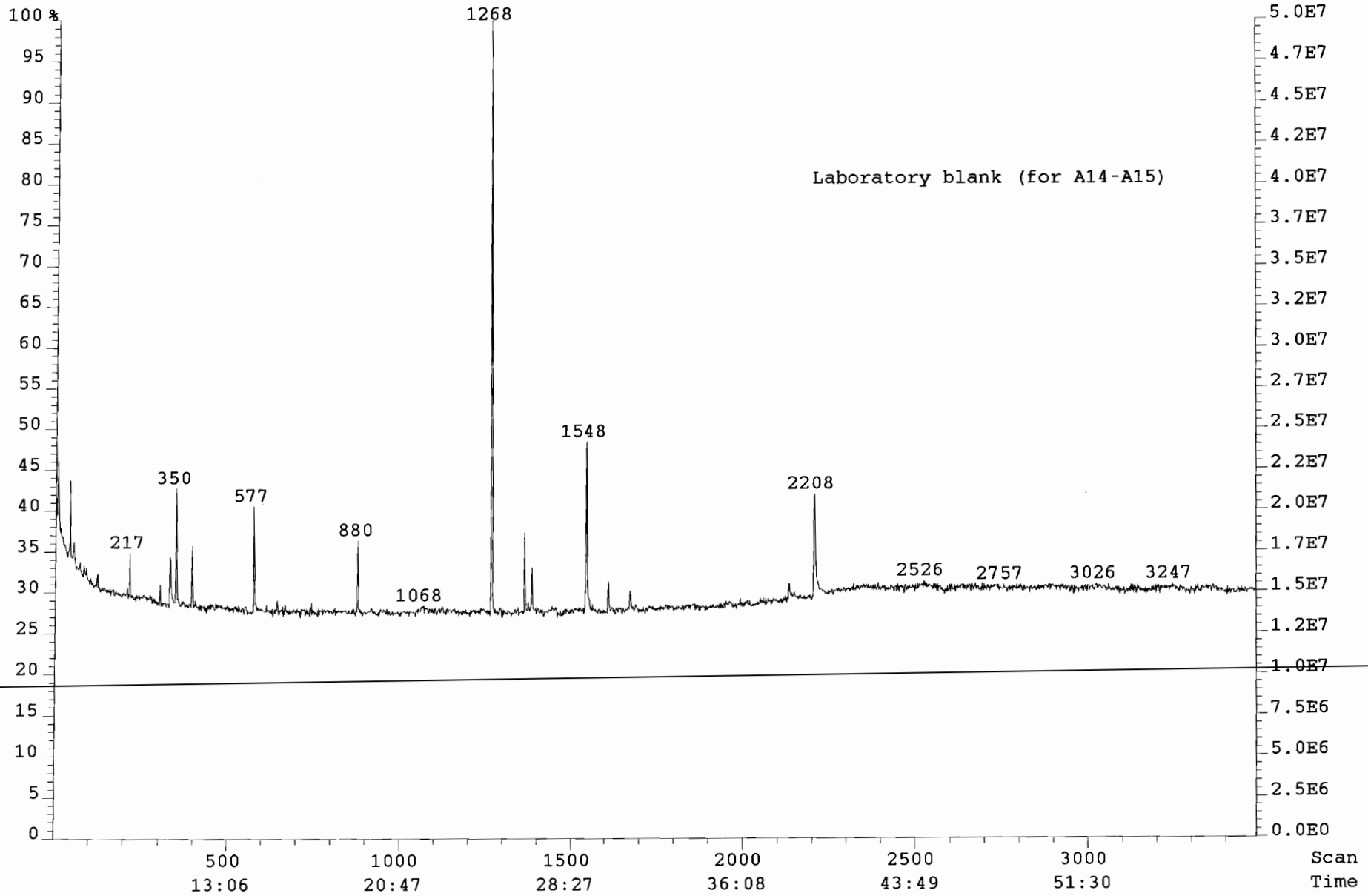
File Text:General Survey



ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	07-Apr-09
Client Reference:	Samples Received 07/04/09	**Data System Code:**	S0071.5	**Date Analysed:**	20-Apr-09
WRc-NSF Reference:	N22745	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0014	d_6-Benzene	P	0.51	2.0	I.S.	Internal Standard
0025	2-Chloro-2-methylbutane	P	0.14	0.5	Bz	Contaminant
0287	Diacetone alcohol	P	0.88	1.3	Cl	Contaminant
3096	d_5-Chlorobenzene	P	1.32	2.0	I.S.	Internal Standard
0357	d_{10}-p-Xylene	P	0.71	1.0	I.S.	Internal Standard
0539	d_5-Phenol	P	1.16	8.0	I.S.	Internal Standard
0825	d_8-Naphthalene	P	0.98	1.0	I.S.	Internal Standard
1209	d_{20}-BHT	P	7.35	8.0	I.S.	Internal Standard
1308	d_{34}-Hexadecane	P	1.00	1.0	I.S.	Internal Standard
1323	Unknown 173, 55, 99, 84	U	0.39	0.4	BHT	Contaminant
1484	d_{10}-Phenanthrene + Tris-(chloropropyl) phosphate isomer	P/T	3.04	2.0	I.S.	Int. Std. + Contaminant
1495	Tris-(chloropropyl) phosphate isomer	T	0.13	0.1	BHT	Contaminant
1553	Di-isobutyl phthalate	P	0.46	0.5	BHT	Contaminant
2085	Di-(2-ethylhexyl) phthalate	P	0.92	4.5	Sq	Contaminant
2155	d_{62}-Squalane	P	1.64	8.0	I.S.	Internal Standard

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

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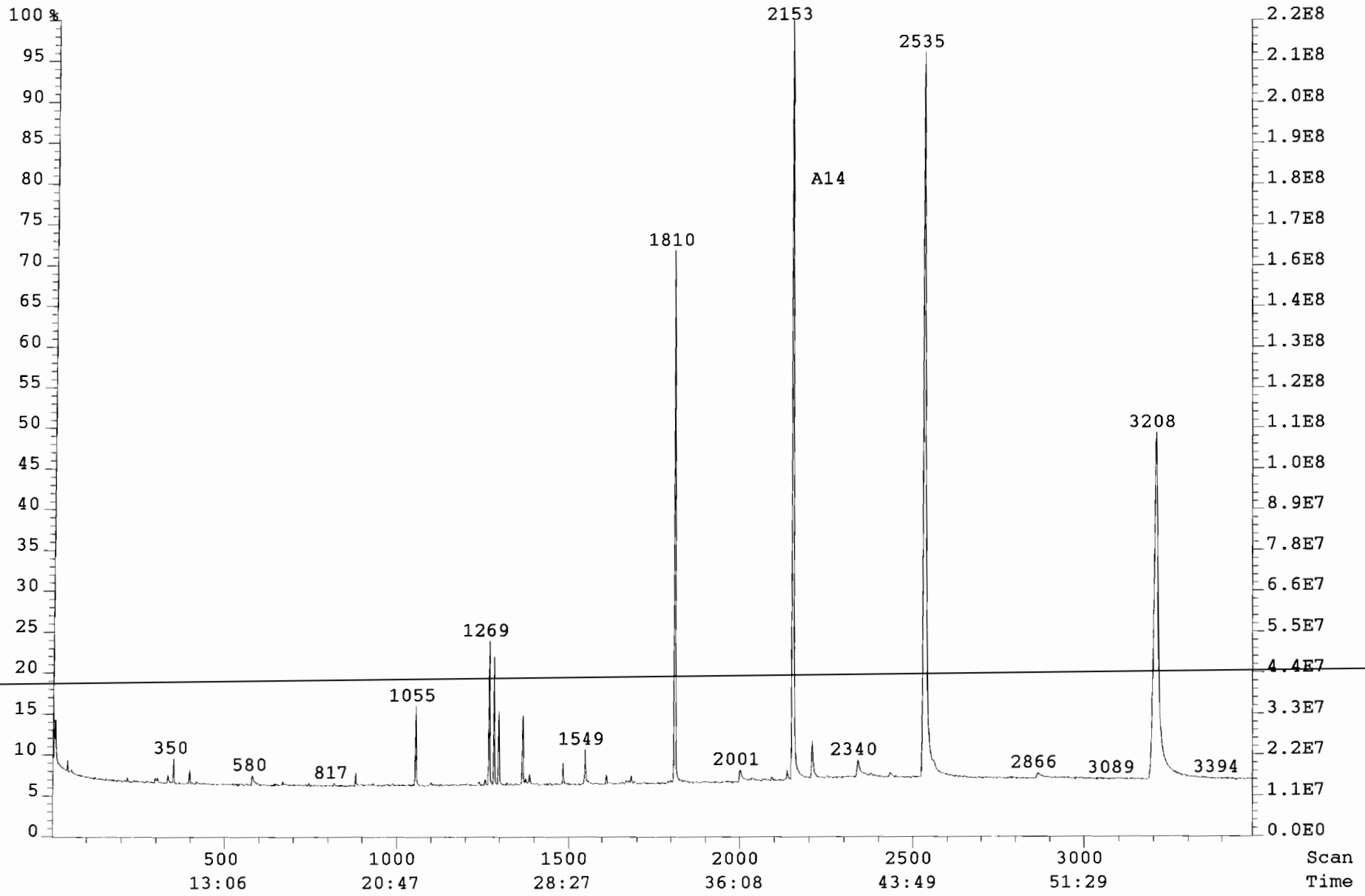
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 10/6/09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File Text:General Survey
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ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A14	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	07-Apr-09
Client Reference:	Samples Received 07/04/09	**Data System Code:**	S0074.6	**Date Analysed:**	03-Jun-09
WRc-NSF Reference:	N22745	**Associated Blank:**	S0071.5	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0004	Tetrahydrofuran	P	1.62	6.1	Bz	Test Material
0007	Iso-butanol	P	2.06	7.8	Bz	Test Material
0042	d_6-Benzene	P	0.53	2.0	I.S.	Internal Standard
0217	Toluene	P	0.28	0.4	Cl	Contaminant
0298	Ethyl-2-hydroxypropanoate	T	0.49	0.7	Cl	Test Material
0303	Butyl acetate	P	0.63	0.9	Cl	Contaminant
0333	Diacetone alcohol	P	0.84	1.2	Cl	Contaminant
0350	d_5-Chlorobenzene	P	1.35	2.0	I.S.	Internal Standard
0397	d_{10}-p-Xylene	P	0.83	1.0	I.S.	Internal Standard
0405	Xylene isomer	P	0.19	0.3	Cl	Test Material
0580	d_5-Phenol	P	2.07	8.0	I.S.	Internal Standard
0668	2-Ethylhexanol	P	0.25	0.4	Cl	Test Material
0743	2-Butoxyethylacetate	T	0.15	0.2	Cl	Test Material
0817	4-Butoxybutanol	T	0.31	0.5	Cl	Test Material
0880	d_8-Naphthalene	P	1.12	1.0	I.S.	Internal Standard
1055	Unknown 101, 42, 54, 55	U	6.00	4.2	BHT	Test Material
1204	Unknown 42, 41, 55, 71	U	0.25	0.2	BHT	Test Material
1240	2,6-Di-t-butyl-4-hydroxy-4-methyl-2,5-cyclohexadien-1-one	T	0.40	0.3	BHT	Test Material
1257	Unknown 45, 115, 58, 55	U	0.44	0.3	BHT	Test Material
1269	d_{20}-BHT	P	11.34	8.0	I.S.	Internal Standard
1283	BHT	P	9.10	6.4	BHT	Test Material
1297	1,6-Dioxacyclododecane-7,12-dione	T	6.12	4.3	BHT	Test Material
1366	Unknown 71, 55, 73, 41 + d_{34}-Hexadecane	U/P	5.93	4.2	BHT	Test Material + Int.Std.
1375	Unknown 71, 43, 41, 57	U	0.40	0.3	BHT	Test Material
1386	Unknown 173, 55, 99, 84	U	0.61	0.4	BHT	Contaminant
1484	Unknown 55, 101, 42, 41	U	1.63	1.1	BHT	Test Material
1544	Tris-(chloropropyl)phosphate isomer	T	0.16	0.1	BHT	Contaminant
1549	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.45	2.0	I.S.	Int. Std. + Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A14	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	07-Apr-09
Client Reference:	Samples Received 07/04/09	**Data System Code:**	S0074.6	**Date Analysed:**	03-Jun-09
WRc-NSF Reference:	N22745	**Associated Blank:**	S0071.5	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
1556	Tris-(chloropropyl)phosphate isomer	T	0.08	0.1	BHT	Contaminant
1612	Di-isobutyl phthalate	P	0.69	0.5	BHT	Contaminant
1810	Unknown 71, 42, 55, 41 [M^+ 288]	U	51.93	70.1	Sq	Test Material
1945	Unknown 42, 41, 71, 43	U	3.04	4.1	Sq	Test Material
2153	Unknown 71, 55, 73, 42 [M^+ 360]	U	94.78	127.9	Sq	Test Material
2209	d_{62}-Squalane	P	5.93	8.0	I.S.	Internal Standard
2340	Unknown 42, 73, 71, 41	U	4.59	6.2	Sq	Test Material
2535	Unknown 71, 42, 55, 73 [M^+ 432]	U	168.90	227.9	Sq	Test Material
3208	Unknown 71, 42, 55, 73 [M^+ 504]	U	143.30	193.3	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

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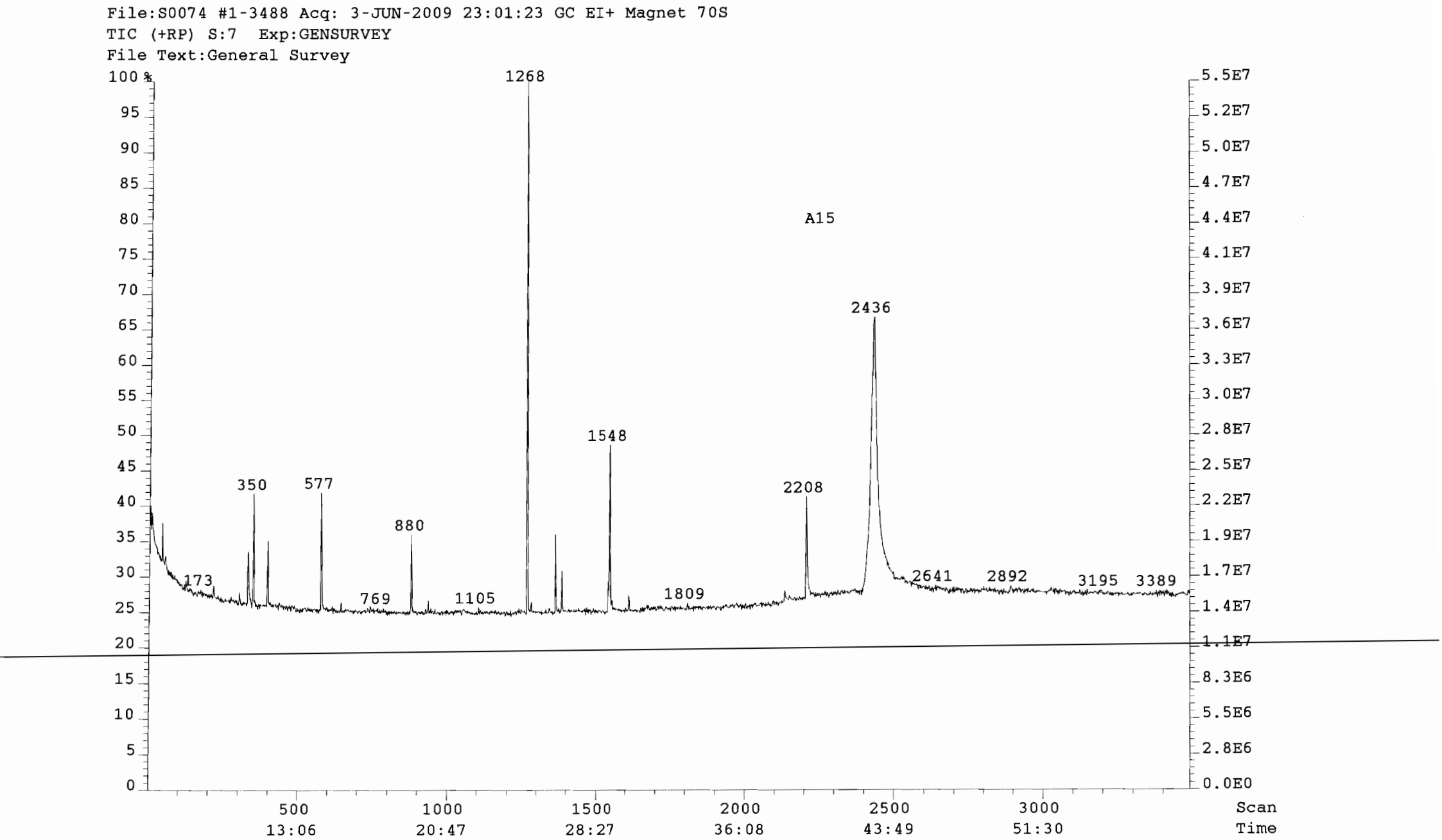
Reported By: H. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 10/6/09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51:30
Scan
Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A15	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	07-Apr-09
Client Reference:	Samples Received 07/04/09	**Data System Code:**	S0074.7	**Date Analysed:**	03-Jun-09
WRc-NSF Reference:	N22745	**Associated Blank:**	S0071.5	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0003	Acetone	P	0.31	1.0	Bz	Contaminant
0007	Tetrahydrofuran	P	0.47	1.5	Bz	Contaminant
0043	d_6-Benzene	P	0.64	2.0	I.S.	Internal Standard
0052	Carbon tetrachloride	P	0.20	0.6	Bz	Contaminant
0055	2-Chloro-2-methylbutane	T				Contaminant
0217	Toluene	P	0.3	0.3	Cl	Contaminant
0304	Butyl acetate	P	0.26	0.3	Cl	Contaminant
0332	Diacetone alcohol	P	1.61	1.8	Cl	Contaminant
0350	d_5-Chlorobenzene	P	1.81	2.0	I.S.	Internal Standard
0397	d_{10}-p-Xylene	P	1.19	1.0	I.S.	Internal Standard
0577	d_5-Phenol	P	2.73	8.0	I.S.	Internal Standard
0645	n-Decane	P	0.18	0.2	Cl	Contaminant
0880	d_8-Naphthalene	P	1.49	1.0	I.S.	Internal Standard
1268	d_{20}-BHT	P	11.55	8.0	I.S.	Internal Standard
1282	BHT	P	0.19	0.1	BHT	Test Material
1364	d_{34}-Hexadecane	P	1.53	1.0	I.S.	Internal Standard
1385	Unknown 173, 55, 99, 84	U	0.88	0.6	BHT	Contaminant
1548	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	4.53	2.0	I.S.	Int. Std. + Contaminant
1555	Tris-(chloropropyl)phosphate isomer	T	0.16	0.1	BHT	Contaminant
1611	Di-isobutyl phthalate	P	0.33	0.2	BHT	Contaminant
2135	D--(2-ethylhexyl) phthalate	P	0.25	0.5	Sq	Contaminant
2208	d_{62}-Squalane	P	4.34	8.0	I.S.	Internal Standard
2436	Unknown 42, 71, 41, 72 [M+ 576] (carry over from A14)	U	66.61	122.8	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

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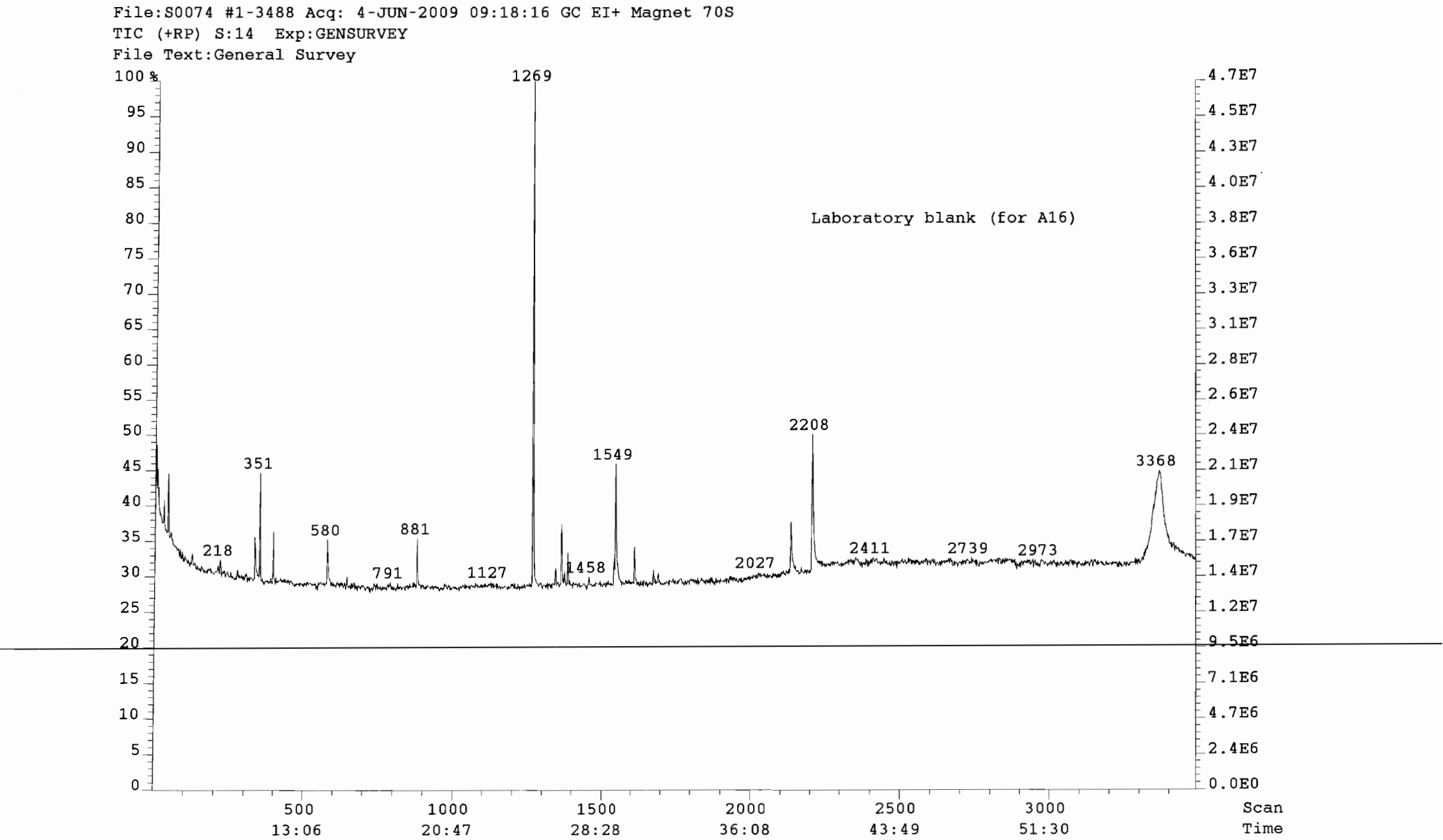
Reported By: H. A. James

Authorised By: J. Dunning
Laboratory Manager

Date: 10/6/09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ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	Laboratory blank	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Bottled water	**Date Received**	05-May-09
Client Reference:	Samples Received 05/05/09	**Data System Code:**	S0074.14	**Date Analysed:**	04-Jun-09
WRc-NSF Reference:	N22758	**Associated Blank:**	n/a	**Page :**	1 of 1
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0003	Acetone	P	0.42	1.0	Bz	Contaminant
0007	Tetrahydrofuran	P	0.33	0.8	Bz	Contaminant
0028	2-Methyl-1,3-dioxolane	T	0.34	0.8	Bz	Contaminant
0043	d_6-Benzene	P	0.88	2.0	I.S.	Internal Standard
0125	n-Heptane	P	0.23	0.5	Bz	Contaminant
0218	Toluene	P	0.36	0.4	Cl	Contaminant
0333	Diacetone alcohol	P	1.22	1.4	Cl	Contaminant
0351	d_5-Chlorobenzene	P	1.72	2.0	I.S.	Internal Standard
0398	d_{10}-p-Xylene	P	1.04	1.0	I.S.	Internal Standard
0580	d_5-Phenol	P	1.36	8.0	I.S.	Internal Standard
0645	n-Decane	P	0.22	0.3	Cl	Contaminant
0881	d_8-Naphthalene	P	1.21	1.0	I.S.	Internal Standard
1269	d_{20}-BHT	P	9.99	8.0	I.S.	Internal Standard
1344	Diethyl phthalate	P	0.29	0.2	BHT	Contaminant
1365	d_{34}-Hexadecane	P	1.17	0.9	I.S.	Internal Standard
1375	2,4,4-Trimethylpentane-1,3-diol di-isobutyrate	T	0.23	0.2	BHT	Contaminant
1386	Unknown 173, 55, 99, 84	U	0.61	0.5	BHT	Contaminant
1549	d_{10}-Phenanthrene + Tris-(chloropropyl) phosphate isomer	P/T	4.00	2.0	I.S.	Int. Std. + Contaminant
1556	Tris-(chloropropyl) phosphate isomer	T	0.15	0.1	BHT	Contaminant
1612	Di-isobutyl phthalate	P	0.87	0.7	BHT	Contaminant
1676	2-Phenyltridecane	T	0.38	0.3	BHT	Contaminant
1692	D-n-butyl phthalate	P	0.25	0.2	BHT	Contaminant
2136	Di-(2-ethylhexyl) phthalate	P	1.83	2.7	Sq	Contaminant
2208	d_{62}-Squalane	P	5.37	8.0	I.S.	Internal Standard
3368	Unknown 42, 71, 41, 72 (carry over)	U	32.29	48.1	Sq	Contaminant

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

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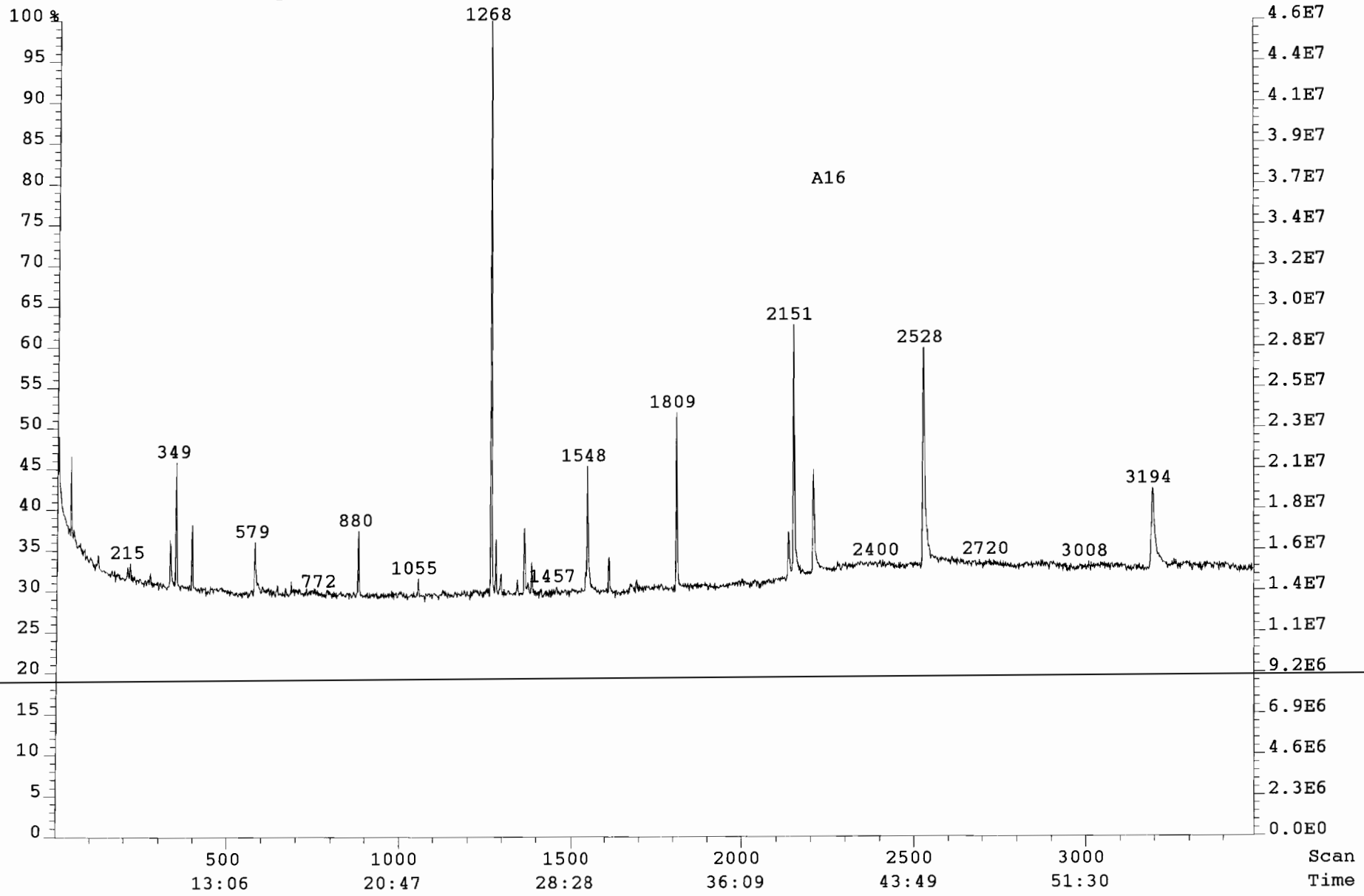
Reported By: H. A. James

Authorised By: John Dunning
J. Dunning
Laboratory Manager

Date: 15/6/09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Time

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A16	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	05-May-09
Client Reference:	Samples Received 05/05/09	**Data System Code:**	S0074.15	**Date Analysed:**	04-Jun-09
WRc-NSF Reference:	N22758	**Associated Blank:**	S0074.14	**Page :**	1 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
0004	Tetrahydrofuran	P	0.47	1.1	Bz	Test Material
0042	d_6-Benzene	P	0.89	2.0	I.S.	Internal Standard
0122	n-Heptane	P	0.24	0.5	Bz	Contaminant
0215	Toluene	P	0.26	0.3	Cl	Contaminant
0331	Diacetone alcohol	P	1.06	1.3	Cl	Contaminant
0349	d_5-Chlorobenzene	P	1.63	2.0	I.S.	Internal Standard
0396	d_{10}-p-Xylene	P	0.90	1.0	I.S.	Internal Standard
0579	d_5-Phenol	P	1.77	8.0	I.S.	Internal Standard
0880	d_8-Naphthalene	P	1.03	1.0	I.S.	Internal Standard
1055	Unknown 101, 42, 54, 55	U	0.41	0.3	BHT	Test Material
1268	d_{20}-BHT	P	9.92	8.0	I.S.	Internal Standard
1282	BHT	P	0.85	0.7	BHT	Test Material
1297	1,6-Dioxacyclododecane-7,12-dione	T	0.28	0.2	BHT	Test Material
1344	Diethyl phthalate	P	0.18	0.1	BHT	Test Material
1365	d_{34}-Hexadecane	P	1.16	0.9	BHT	Internal Standard
1375	Unknown 71, 43, 41, 57	U	0.16	0.1	BHT	Test Material
1386	Unknown 173, 55, 99, 84	U	0.58	0.5	BHT	Contaminant
1548	d_{10}-Phenanthrene + Tris-(chloropropyl)phosphate isomer	P/T	3.54	2.0	I.S.	Int. Std. + Contaminant
1555	Tris-(chloropropyl)phosphate isomer	T	0.10	0.1	BHT	Contaminant
1612	Di-isobutyl phthalate	P	0.71	0.6	BHT	Contaminant
1809	Unknown 71, 42, 55, 41 [M^+ 288]	U	3.39	8.0	Sq	Test Material
2135	Di-(2-ethylhexyl) phthalate	P	1.24	2.9	Sq	Test Material
2151	Unknown 71, 42, 73, 55 [M^+ 360]	U	6.23	14.7	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane, Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L. = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

ANALYSIS REPORT

General Survey GCMS Analysis

Contact Name:	P Jackson	**Sample Code:**	A16	**Method Ref:**	ORG042
Client:	WRc-NSF	**Sample Type:**	Groundwater	**Date Received**	05-May-09
Client Reference:	Samples Received 05/05/09	**Data System Code:**	S0074.15	**Date Analysed:**	04-Jun-09
WRc-NSF Reference:	N22758	**Associated Blank:**	S0074.14	**Page :**	2 of 2
WRc-NSF Contract No:	14907-0	**Sample Volume:**	1 Litre		

Scan	Compound	Con.L**	Peak Area	Conc. (ug/l)	Internal Standard	Origin of Peak
2208	d_{62}-Squalane	P	3.40	8.0	I.S.	Internal Standard
2528	Unknown 71, 42, 41, 55 [M^+ 432]	U	8.96	21.1	Sq	Test Material
3194	Unknown 42, 71, 41, 72 [M^+ 504]	U	6.18	14.5	Sq	Test Material

Internal standards used: Bz=d6-Benzene, Cl=d5-Chlorobenzene, Xy=d10-p-Xylene, Po=d5-Phenol, Na=d8-Naphthalene, BHT = d20-2,6-dit-butyl-4-methylphenol, Hx=d34-Hexadecane. Ph=d10-Phenanthrene and Sq=d62-Squalane

**Con.L = Confidence level of identification: P=Positive, T=Tentative and U=Unknown

Samples were analysed as received unless otherwise stated.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Details of the WRc-NSF UKAS Accreditation Schedule are available on request.

Tests marked $: Not included in the WRc-NSF UKAS Accreditation Schedule.

Tests marked @: Tests not performed by WRc-NSF, approved subcontractor is not UKAS accredited for this test.

Tests marked *: Tests not performed by WRc-NSF, approved subcontractor is UKAS accredited for this test.

Reported By: A. A. James

Authorised By: John Dunning

J. Dunning
Laboratory Manager

Date: 16/6/09