

Valleyfield Ash Lagoons

Annual Environmental Monitoring Review 2016



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1.0 INTRODUCTION

1.1 Scope of Works

SLR Consulting Limited (SLR) has been retained by Scottish Power Generation Ltd (SPGL) to prepare the annual monitoring report for their ash lagoons at Valleyfield, High Valleyfield, Fife.

The site is operated and managed in accordance with PPC Permit No. PPC/A/1004266. Condition 10.4.1 of the Permit states:

'The Operator shall report to SEPA on the basis of aggregated data once a year the results of monitoring carried out in compliance with Conditions 8.2.3, 10.1.12, and 11.7.1. This report shall give an explanation and interpretation of any trends or exceedences of Trigger levels in the monitoring data submitted. This report shall be submitted to SEPA, in writing, by 31st March each year.'

This report presents and reviews the monitoring data for the period 1st January 2016 to 31st December 2016.

All laboratory certificates detailing the chemical analysis data for the period are presented in Appendix A and supporting time series plots and reports are presented in Appendices B - J. A site monitoring plan is also presented as Drawing No.1. The environmental monitoring requirements at Valleyfield are based on those outlined in the PPC Permit unless these have been amended by the Valleyfield Ash Lagoons Management Plans (LON ENV PPC 7725, 2009) and are detailed in Table 1-1.

| Type of Sample | Location | Suite |
|----------------------|--|---|
| Groundwater | VF1, VF3D, VF5, VF7, VF8, VF9, VF10, VF11 and VF12 | Quarterly Water level, Electrical Conductivity, pH, Antimony, Arsenic, Boron, Cadmium, Chromium, Chloride, Magnesium, Manganese, Naphthalene Molybdenum, Selenium, Sodium, Sulphate and Vanadium |
| Leachate | VF4 and VF6 | Quarterly Electrical Conductivity, pH, Antimony, Arsenic, Boron, Cadmium, Chromium, Chloride, Magnesium, Manganese, Naphthalene Molybdenum, Selenium, Sodium, Sulphate and Vanadium |
| Surface Water | River Forth upstream and downstream of site Toe Drain Discharge Water Supernatant Lagoon Water | Quarterly Electrical Conductivity, pH, Antimony, Arsenic, Boron, Cadmium, Chromium, Chloride, Magnesium, Manganese, Naphthalene Molybdenum, Selenium, Sodium, Sulphate and Vanadium |
| Gas | All Perimeter Boreholes | Q <i>uarterly</i> Methane, Carbon Dioxide, Oxygen, Atmospheric Pressure, Differential Pressure. |
| Ash Characterisation | PFA samples | Quarterly |

Table 1-1Summary Monitoring Requirements at Valleyfield Ash Lagoons

| Type of Sample | Location | Suite |
|----------------|----------|--|
| WAC Test | | Waste Acceptance Criteria (WAC) testing (2 Batch test) and leachability testing for pH, Antimony, Arsenic, Boron, Cadmium, Chromium, Chloride, Magnesium, Manganese, Naphthalene ,Molybdenum, Selenium, Sodium, Sulphate and Vanadium |

It is noted that at the request of ScottishPower the full monitoring suite detailed in Table 10.1.12 of the PPC Permit has been analysed in third and fourth quarter of this monitoring period for groundwater, leachate, toe drain and estuarine (surface water) samples. This report has been prepared in accordance with the 2009 Valleyfield Ash Lagoons Management Plans.

Details of remedial actions or additional monitoring completed by SPGL, over and above that specified in the PPC Permit, are presented in the appropriate sections of this report.

1.2 Report Structure

This report is structured as follows:

- Section 2.0 Presents the results of leachate quality and level from 'in-waste' boreholes;
- Section 3.0 Presents a summary of the supernatant water quality collected;
- Section 4.0 Presents the results of surface water quality monitoring;
- Section 5.0 Assesses groundwater quality and the results of routine groundwater level monitoring;
- Section 6.0 Presents perimeter landfill gas monitoring data;
- Section 7.0 Provides information on the topography of the ash lagoons, waste type and quantity; and
- Section 8.0 Presents actions and recommendations.

2.0 LEACHATE QUALITY AND LEVELS

2.1 'Leachate' Quality

Condition 10.1.2. of the PPC Permit requires that 'leachate' monitoring is conducted in boreholes VF4 and VF6; the 'PFA boreholes'. In accordance with the Permit requirements and the revised monitoring protocol as detailed in the Valleyfield Management Plans (2009), monitoring has been undertaken for the PFA boreholes VF4 and VF6 on a quarterly basis during this monitoring period and the following determinands reported herein:

- electrical conductivity
 - ty o pH
- o antimony

0

o cadmium

magnesium

- o arsenico chloride
- manganese
 - naphthalene
- molybdenumselenium

In the instance where concentrations of determinands are reported below the limit of detection (LoD), these data points are presented on the charts as the reported LoD (i.e. <0.05 mg/l shall be plotted as 0.05 mg/l).

A summary of the 'leachate' quality recorded in the 'PFA' boreholes during the monitoring period is summarised below in Table 2-1 with time-series plots of selected determinands presented in Appendix B. Leachate analysis data are presented electronically in Appendix A.

| | | • | VF4 | | | | | |
|--------------|----------|-------|----------|----------|----------|----------|----------|----------|
| Determinand | Unit | Count | Min | Mean | Max | Min | Mean | Max |
| Chloride | mg/l | 4 | 8,860 | 10,515 | 11,500 | 3,000 | 5,973 | 7,540 |
| Conductivity | mS/cm | 4 | 22.3 | 24.9 | 27.4 | 8.44 | 14.0 | 18.7 |
| pН | pH Units | 4 | 7.63 | 7.77 | 7.90 | 7.89 | 7.99 | 8.15 |
| Sulphate | mg/l | 4 | 1,350 | 1,523 | 1,650 | 470 | 695 | 816 |
| Antimony | mg/l | 4 | 0.000160 | 0.000185 | 0.000236 | 0.000213 | 0.000699 | 0.001250 |
| Arsenic | mg/l | 4 | 0.00127 | 0.00535 | 0.01700 | 0.02460 | 0.03238 | 0.04280 |
| Boron | mg/l | 4 | 3.77 | 6.66 | 9.74 | 5.07 | 7.55 | 10.00 |
| Cadmium | mg/l | 4 | 0.000080 | 0.000573 | 0.001440 | 0.000083 | 0.000970 | 0.003020 |
| Chromium | mg/l | 4 | 0.00120 | 0.00208 | 0.00352 | 0.00110 | 0.00129 | 0.00164 |
| Magnesium | mg/l | 4 | 410.0 | 518.5 | 580.0 | 29.6 | 47.4 | 64.2 |
| Manganese | mg/l | 4 | 0.0370 | 0.0689 | 0.1070 | 0.0116 | 0.0413 | 0.0597 |
| Molybdenum | mg/l | 4 | 0.218 | 0.265 | 0.387 | 0.302 | 0.422 | 0.466 |
| Selenium | mg/l | 4 | 0.00139 | 0.01646 | 0.05670 | 0.00081 | 0.02100 | 0.06770 |
| Sodium | mg/l | 4 | 3,900 | 5,308 | 5,990 | 1,680 | 2,653 | 3,500 |
| Vanadium | mg/l | 4 | 0.00024 | 0.00077 | 0.00130 | 0.00996 | 0.02494 | 0.04030 |
| Naphthalene | mg/l | 4 | <0.0001 | - | <0.0001 | <0.0001 | - | <0.0001 |

Table 2-1Summary of 'Leachate' Quality 2016

Review of the data collected indicates that:

• Chloride, sulphate, chromium, magnesium, manganese, and sodium have all recorded higher maximum concentrations in VF4 than in VF6 during 2016, as was the case in 2015 and reflects VF4 in closer to the Forth in comparison to VF6;

o boron

0

0

0

chromium

sulphate

sodium

o vanadium

• Antimony generally presents higher concentrations in VF6 than those recorded at VF4 with VF4 presenting very stable concentrations in a narrow range;

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- Magnesium and manganese concentrations are, in general, significantly higher in VF4 than recorded in VF6, which continues the trend observed in 2011, 2012, 2013, 2014 and 2015;
- Naphthalene was not detected above the laboratory limit of detection (<0.0001mg/l) during 2016 in either borehole;
- Boron concentrations are generally higher in VF6 than those in VF4 and within historic ranges. Samples collected from VF4 on 07/03/2016 recorded the highest concentration (9.74 mg/l) of boron in this borehole since monitoring commenced, with concentrations falling significantly to 3.77 mg/l for samples collected on 06/06/2016;
- Cadmium concentrations have remained within historical ranges at both monitoring locations, samples collected on 06/06/2016 from both VF4 and VF6 showed higher concentrations of 0.00144 and 0.00302 mg/l respectively however no discernible trends are observed when concentrations fell significantly in the third quarter of 2016;
- Vanadium recorded in VF6 is higher than that recorded in VF4 during this monitoring period. Concentrations of vanadium in VF4 are very stable and low, existing in a narrow range, whilst VF6 shows more variability; and
- All concentrations are largely comparable to those recorded during previous monitoring events at site.

No leachate composition control and trigger levels are specified in the PPC Permit or in the Leachate Management Plan¹ submitted to SEPA in November 2009.

2.2 'Leachate' Levels

A summary of 'leachate' elevations collected on a quarterly basis during the review period are presented as a time-series plot below in Figure 2-1. A summary of all 'leachate' elevation data, showing long term trends is presented in Appendix C.

¹ SLR Consulting Limited, November 2009, *Valleyfield Ash Lagoons Leachate Management Plan*, Condition 6.4.1, SLR Ref 405-0481-00020-001.



Review of Figure 2-1 indicates that VF4 records higher elevations (between 1.43 to 1.98 m above ordnance datum (AOD)) than PFA borehole VF6 (between 1.10 and 1.56 m AOD) over all four monitoring rounds.

Review of Appendix C indicates that the 'leachate' elevations recorded during 2016 are largely representative of elevations recorded since monitoring commenced in accordance with the PPC Permit.

Figure 2-1 Summary of 'Leachate' Elevations in PFA boreholes 2016

3.0 SUPERNATANT WATER QUALITY

Prior to closure of Longannet Power Station and cessation of ash deposition supernatant water samples were obtained from the active PFA lagoon on a quarterly basis during the monitoring periods, and analysed in accordance with that detailed in the Valleyfield Groundwater Management Plan² submitted to SEPA in November 2009. However, following site closure, on 31/03/2016, supernatant water was no longer generated and sample collection was no longer possible. As such, the lagoons were only active during QM1, after which no samples were taken.

A summary of the supernatant water quality data collected for 2016 is presented below in Table 3-1.

| Cummary of Supernatant Water wuality 2010 | | | | | | | |
|---|----------|----------------------------|--|--|--|--|--|
| Determinand | Unit | Concentration (07/03/2016) | | | | | |
| Antimony | mg/l | 0.0337 | | | | | |
| Arsenic | mg/l | 0.132 | | | | | |
| Boron | mg/l | 7.38 | | | | | |
| Cadmium | mg/l | <0.001 | | | | | |
| Chromium | mg/l | 0.0913 | | | | | |
| Magnesium | mg/l | 965 | | | | | |
| Manganese | mg/l | 0.00471 | | | | | |
| Molybdenum | mg/l | 0.41 | | | | | |
| Selenium | mg/l | 0.444 | | | | | |
| Sodium | mg/l | 8190 | | | | | |
| Vanadium | mg/l | 0.467 | | | | | |
| Chloride | mg/l | 17500 | | | | | |
| Conductivity | mS/cm | 36.8 | | | | | |
| pH | pH Units | 9.28 | | | | | |
| Sulphate | mg/l | 2500 | | | | | |
| Naphthalene (ag) | mg/l | <0.0001 | | | | | |

 Table 3-1

 Summary of Supernatant Water Quality 2016

Time series plots of supernatant water quality are presented in Appendix D and confirm together with review of Table 3-1 that during the monitoring period:

- Concentrations of antimony, arsenic, boron, cadmium, molybdenum and vanadium are within historical ranges;
- Selenium recorded for supernatant samples collected on 07/03/206 were the highest since monitoring commenced at 0.444 mg/l, and
- naphthalene was not detected above the laboratory LoD (<0.0001mg/l) during the review period.

² SLR Consulting Limited, November 2009, *Valleyfield Ash Lagoons Groundwater Management Plan and HRA Review*, Condition 10.4.1, SLR Ref 405-0481-00020-003.

4.0 SURFACE WATER QUALITY

4.1 Toe Drain Water Quality

In accordance with Table 10.1.12 of the Permit, and the monitoring protocol proposed in the Groundwater Management Plan², discharge water quality monitoring data was collected on a quarterly basis from the Toe Drain. The location of the sampling point is shown on the monitoring plan presented as Drawing No.1.

Time series plots of the toe drain water quality are presented in Appendix E with a summary of quality data presented below in Table 4-1.

| Determinand | Unit | No of readings | Minimum | Average | Maximum |
|------------------|----------|----------------|----------|-----------|---------|
| Antimony | mg/l | 4 | 0.000966 | 0.001429 | 0.00192 |
| Arsenic | mg/l | 4 | 0.00607 | 0.0097325 | 0.0184 |
| Boron | mg/l | 4 | 4.42 | 8.0325 | 11.4 |
| Cadmium | mg/l | 4 | 0.000171 | 0.00096 | 0.00255 |
| Chromium | mg/l | 4 | < 0.0012 | 0.00127 | 0.00136 |
| Magnesium | mg/l | 4 | 219 | 235.25 | 265 |
| Manganese | mg/l | 4 | 0.11 | 0.1165 | 0.12 |
| Molybdenum | mg/l | 4 | 0.582 | 0.6405 | 0.667 |
| Selenium | mg/l | 4 | 0.00144 | 0.067 | 0.0503 |
| Vanadium | mg/l | 4 | 0.0403 | 0.064 | 0.0598 |
| Conductivity | mg/l | 4 | 22 | 26.131 | 26 |
| Sulphate | mg/l | 4 | 1430 | 1547.5 | 1630 |
| Chloride | mS/cm | 4 | 9230 | 10507.5 | 11000 |
| рН | pH Units | 4 | 8.08 | 8.2325 | 8.41 |
| Sodium | mg/l | 4 | 4530 | 5590 | 6740 |
| Naphthalene (aq) | mg/l | 4 | <0.0001 | - | <0.0001 |

Table 4-1Summary of Toe Drain Water Quality 2016

Review of the time-series plots and Table 4-1 confirms the following:

- Concentrations for many of determinands show a general decreasing trend in concentrations for the 2016 monitoring period (antimony, arsenic, cadmium, selenium and vanadium);
- Boron concentrations for samples collected on 07/03/2016 were the highest at 11.4 mg/l since monitoring commenced. It is noted that samples collected on 06/06/2016 showed a significant fall in boron to 4.42 mg/l, returning to concentrations that have been very stable and recorded between 2011-2015 at 7.52 and 8.74 mg/l during the third and fourth monitoring rounds in 2016.
- Calcium concentrations have generally decreased however samples collected on 06/06/2016 presented the highest concentrations (0.00255 mg/l) since the first quarter of 2014. It is noted that concentrations fell significantly during Q3 and Q4 2016 to the lowest concentrations (0.000171 mg/l) on 29/11/2016 since monitoring commenced;
- Molybdenum concentrations have remained very stable since 2011;
- Vanadium concentrations decreased steadily during 2016 and for samples collected on 29/11/2016 presented the lowest concentrations (0.0403 mg/l) since 2009; and

• Naphthalene has not been detected above the laboratory reporting limited (<0.0001mg/l) during the 2016 review period.

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4.2 Estuarine Water Quality

In accordance with the PPC Permit, and the monitoring protocol proposed in the Groundwater Management Plan and Hydrogeological Risk Assessment (HRA) Review², surface water quality data is collected from the River Forth upstream and downstream of the site on a quarterly basis. Time-series plots of selected determinands are presented in Appendix F with summary statistics presented in Table 4-2.

| | | Upstream Water (ES2) | | | | | Downstream Water (ES1) | | | |
|--------------|-------|----------------------|-----------|-----------|----------|-------|------------------------|----------|----------|--|
| Determinand | Unit | Count | Min | Mean | Max | Count | Min | Mean | Max | |
| Chloride | mg/l | 4 | 16,200 | 16,750 | 17,600 | 4 | 16,200 | 17,075 | 17,900 | |
| Conductivity | mS/cm | 4 | 30.8 | 34.5 | 36.6 | 4 | 33.4 | 36.7 | 38.4 | |
| pН | Units | 4 | 7.82 | 7.86 | 7.89 | 4 | 7.8 | 8.0 | 8.5 | |
| Sulphate | mg/l | 4 | 2,190 | 2,245 | 2,320 | 4 | 2,320 | 2,365 | 2,400 | |
| Antimony | mg/l | 4 | <0.00016 | 0.00176 | 0.00574 | 4 | 0.000471 | 0.002620 | 0.006650 | |
| Arsenic | mg/l | 4 | 0.00185 | 0.01897 | 0.05550 | 4 | 0.00229 | 0.02616 | 0.05820 | |
| Boron | mg/l | 4 | 2.42 | 3.23 | 3.79 | 4 | 3.02 | 3.43 | 4.31 | |
| Cadmium | mg/l | 4 | <0.0008 | 0.00254 | 0.00951 | 4 | <0.00008 | 0.00319 | 0.01080 | |
| Chromium | mg/l | 4 | <0.0012 | 0.0050 | 0.0072 | 4 | <0.0012 | 0.0105 | 0.0210 | |
| Magnesium | mg/l | 4 | 905 | 1,004 | 1,070 | 4 | 965 | 1,071 | 1,110 | |
| Manganese | mg/l | 4 | 0.00736 | 0.02289 | 0.0507 | 4 | 0.00155 | 0.01261 | 0.027 | |
| Molybdenum | mg/l | 4 | 0.00501 | 0.03593 | 0.05650 | 4 | <0.0024 | 0.0612 | 0.165 | |
| Selenium | mg/l | 4 | <0.00081 | 0.0639925 | 0.178 | 4 | <0.00081 | 0.08118 | 0.19100 | |
| Sodium | mg/l | 4 | 7,390 | 8182.5 | 8,790 | 4 | 7,930 | 8,798 | 9,700 | |
| Vanadium | mS/cm | 4 | 0.00149 | 0.00374 | 0.00780 | 4 | <0.0024 | 0.0276 | 0.0873 | |
| Napthalene | Units | 4 | < 0.00001 | - | <0.00001 | 4 | < 0.00001 | - | <0.00001 | |

| Table 4-2 | | | | |
|---|--|--|--|--|
| Summary of Estuarine Water Quality 2016 | | | | |

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Review of the time-series plots and Table 4-2 indicates that:

- concentrations of the majority of determinands remained within historic ranges with samples collected on 06/06/2016 presenting slightly elevated concentrations (lower concentrations were then recorded in September and November 2016);
- arsenic concentrations for samples collected on 06/06/2016, 0.0582 and 0.0555 mg/l for ES1 and ES2 respectively, were the highest since 2011. It is noted that concentrations for samples collected on 06/09/2016 were significantly lower at 0.00229 and 0.00461 mg/l for ES1 and ES2 respectively, remaining low during the fourth 2016 quarterly sampling round;
- cadmium concentrations were generally low and very stable throughout 2016, however it is noted that samples collected on 06/06/2016 presented higher concentrations at 0.0108 and 0.00951 mg/l for ES1 and ES1 respectively with ES1 presenting its highest concentration since monitoring began. Concentrations for cadmium in samples collected on 06/09/2016 fell significantly to 0.00008 and 0.00048 mg/l for ES1 and ES2 respectively, remaining low during the fourth 2016 quarterly sampling round;
- molybdenum concentrations for samples collected at ES1 on 07/03/2016 were the highest since 2012 at 0.165 mg/l with samples collected at ES2 on 07/03/2016 were significantly lower at 0.0548 mg/l. Concentrations of molybdenum in samples collected on 06/06/2016 were very low at 0.0024 and 0.00501 mg/l for ES1 and ES2 respectively;
- selenium concentrations for samples collected on 06/06/2016 were the highest since 2010 at 0.191 and 1.178 mg/l for ES1 and ES2 respectively. Concentrations for selenium in samples collected 06/09/2016 fell significantly to 0.00081 and 0.00486 mg/l for ES1 and ES2 respectively;
- vanadium concentrations were generally very stable and low however samples collected for ES1 on 07/03/2016 were the highest since 2012 at 0.0873 mg/l. Samples collected from ES1 on 06/06/2016 presented vanadium concentration significantly lower at 0.0024 mg/l;
- in general there is little difference between upstream and downstream estuarine water during 2015; and
- samples collected during the third and fourth 2016 quarterly rounds presented very stable and low concentrations for each determinand and no specific trends are noted in the monitoring record.

5.0 GROUNDWATER QUALITY AND ELEVATION

Groundwater elevation and quality sampling was undertaken from boreholes specified in Table 10.1.12 of the PPC Permit on a quarterly basis. It should be noted that the monitoring suite analysed is that stated in Table 13 of the Groundwater Management Plan and HRA Review², which is a revision to that stated in the original PPC Permit.

5.1 Groundwater Quality

Time-series plots of selected determinands for the review period are presented in Appendix G with raw data presented in Appendix A.

Review of the monitoring data indicates the following:

- Antimony concentrations are generally very low remaining significantly below both control and trigger levels in all boreholes for 2016 with the exception of samples collected from VF1 during the first quarterly monitoring event of 2016 where the trigger level (0.00625 mg/l) was exceeded with a concentration of 0.00782 mg/l. It is noted that concentrations for samples collected at VF1 fell below the LoD (<0.0016 mg/l) in the second and third monitoring events of 2016;
- Boron and molybdenum concentrations are generally very stable, existing in a narrow range (excluding VF8 and VF10) and within the historic ranges at all monitoring locations. VF8 and VF10 continue to present the highest concentrations of boron in monitored boreholes;
- Cadmium concentrations are within historic ranges at all monitoring locations during 2016 however several recorded elevated concentrations during the second quarterly monitoring round (only): VF3D, VF5, VF7, VF8, VF9 and VF10. Concentrations for all monitoring locations for the third and fourth 2016 quarterly monitoring events show a significant decrease and return the values typical of the long term monitoring record;
- Selenium concentrations presented within historic ranges for all monitoring locations. It
 is noted that the first and second quarterly monitoring events recorded concentrations
 within the typical ranges historically recorded by each monitoring well however in the
 third and fourth 2016 quarterly monitoring events concentrations fell significantly for all
 monitoring wells to below 0.00462 mg/l;
- Vanadium concentrations are very low and stable, existing within historic monitoring data ranges;
- Concentrations recorded in all groundwater monitoring boreholes have generally not shown any significant rising trends; and
- naphthalene has not been recorded above the LoD (<0.0001mg/l) throughout the review period.

Further review of the priority determinands is presented in Appendix H and Section 5.2 of this report.

5.2 Groundwater Trigger Events

For the purposes of this report groundwater quality data has been assessed against the control and trigger levels specified in Table 14 of the Groundwater Management Plan and HRA Review², submitted to SEPA in November 2009 which have been determined in accordance with Permit Condition 10.3.2 and are considered more appropriate for assessing groundwater quality at site than those originally stated in the PPC Permit.

Control charts showing concentrations recorded in each borehole and borehole specific control and trigger levels are presented in Appendix H.

Table 5-1 below summarises trigger events that have occurred during the review period and the results of repeat sampling (*see italics*). It should be noted that a trigger event occurs only when both the control level and the trigger level have been exceeded.

| Determinand | Borehole | Control and Trigger Level | Concentration (sample date) |
|-------------|----------|--|--|
| | | Control Level : 0.00032 mg/l | 0.000561 mg/l (07/06/2016) |
| | VFSD | Trigger Level : 0.00036 mg/l | 0.000409 mg/l (29/06/2016) |
| Cadmium | VF9 | Control Level : 0.00171 mg/l Trigger Level : 0.00036 mg/l | 0.00493 mg/l (06/06/2016)(due to sampling error no repeat sample obtained) |
| | VF10 | Control Level : 0.00157 mg/l | 0.0017 mg/l (07/06/2016) |
| | | Trigger Level : 0.00036 mg/l | 0.00217 mg/l (29/06/2016) |
| Boron | VF8 | Control Level : 6.12 mg/l | 6.38 mg/l (07/09/216) |
| | 10 | Trigger Level : 4.924 mg/l | 0.0179 mg/l (21/09/2016) |

| Table 5-1 |
|---|
| Summary of Groundwater Trigger Events Exceedences in 2016 |

Review of Table 5-1 indicates that during the review period, trigger events (as stated in the Groundwater Management Plan and HRA Review) for boron occurred at borehole VF8 in the third quarter of 2016 and for cadmium at boreholes VF3D, VF9 and VF10 in the second quarter of 2016. No trigger events were recorded for antimony or vanadium throughout the review period.

Following review of the control charts the following observations are made:

- Boron concentrations at monitoring location VF8 exceeded control levels during September 2016, however repeat sampling presented significantly lower concentrations below both control and trigger levels. Concentrations remained below both control and trigger levels for samples collected in the fourth 2016 quarterly monitoring event; and
- Cadmium concentrations for monitoring locations VF3D (0.000561 mg/l), VF9 (0.00493 mg/l) and VF10 (0.0017 mg/l) all presented an exceedance both control and trigger levels in June 2016 however subsequent sampling in 2016 in September and November at all locations showed a significant fall in concentrations, and below the borehole specific trigger levels.

5.3 Groundwater Elevations

Groundwater elevations were obtained from the groundwater monitoring boreholes on a quarterly basis in accordance with the PPC Permit.

All groundwater elevations are compared to tide prediction levels for Kincardine obtained from the Admiralty easytide website (<u>http://easytide.ukho.gov.uk</u>) to determine whether measurements have been collected at high or low tide or during flood or ebb. A time-series plot of groundwater elevations for the review period is presented below, with summary statistics presented in Table 5-2. A groundwater hydrograph of the entire monitoring record is presented in Appendix I.



Figure 5-1 Summary of Groundwater Elevations (m AOD) at Valleyfield Ash Lagoons 2016

| | Table 5-2 | 2 | |
|------------|-------------|------------|--------|
| Summary of | Groundwater | Elevations | (2016) |

| Danahala | | Groundwater Elevations in mAOD | | | | | | | | | | | | |
|----------|----------------|--------------------------------|-------|---------|-----------|--|--|--|--|--|--|--|--|--|
| Borenole | No of readings | Minimum | Mean | Maximum | Range (m) | | | | | | | | | |
| VF1 | 4 | 0.010 | 1.500 | 2.680 | 2.670 | | | | | | | | | |
| VF3D | 5 | 5.020 | 5.335 | 5.900 | 0.880 | | | | | | | | | |
| VF5 | 6 | 2.530 | 2.818 | 2.920 | 0.390 | | | | | | | | | |
| VF7 | 6 | 0.555 | 1.133 | 1.530 | 0.975 | | | | | | | | | |
| VF8 | 5 | 1.560 | 1.678 | 1.870 | 0.310 | | | | | | | | | |
| VF9 | 4 | 4.539 | 5.369 | 5.880 | 1.341 | | | | | | | | | |
| VF10 | 5 | 0.590 | 0.984 | 1.508 | 0.918 | | | | | | | | | |
| VF11 | 4 | 4.440 | 6.033 | 6.590 | 2.150 | | | | | | | | | |
| VF12 | 6 | 3.106 | 3.330 | 3.760 | 0.654 | | | | | | | | | |

Review of Figure 5-1 and Table 5-2 suggests that the range in groundwater elevations over the monitoring period within each monitoring location is generally less than 1.0 m. VF1 has the greatest range suggesting that groundwater here is strongly influenced by the tide. The eastern boreholes VF5 and VF8 record the lowest ranges on site of less than 0.5 m. Groundwater elevations are greatest in boreholes VF3D, VF9, VF11 and VF12, located within the centre and north of the site, with the lowest elevations recorded in boreholes VF1, VF7, VF8 and VF10, which are located along the perimeter. This confirms that the groundwater flow direction is from the lagoons in a radial direction towards the east, south and west (i.e. towards the estuary), as stated in Section 3.2 of the Groundwater Management Plan and HRA Review report.

Borehole VF11 continues to record groundwater elevations above ground level confirming that this borehole monitors an artesian aquifer.

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Review of the long term groundwater elevations, presented in Appendix I, indicates that the range of groundwater elevations in most of the boreholes is generally less than two metres. VF1 recorded its highest groundwater elevation during monitoring on 06/06/2016 at 2.68 m AOD since monitoring commenced. In summary, with the exception of VF1 on 06/06/2016, groundwater elevations recorded in 2016 have remained within elevations recorded in the baseline and long term monitoring record.

6.0 GAS MONITORING DATA

Perimeter landfill gas concentrations were monitored in all perimeter groundwater monitoring boreholes and the two PFA boreholes on a quarterly basis. Readings of methane, carbon dioxide, oxygen, atmospheric pressure and differential pressure were taken during each monitoring event.

Time-series plots of methane and carbon dioxide concentrations recorded during the review period are presented in Appendix J, together with long term monitoring data. Summary statistics for oxygen, atmospheric pressure and differential pressure are presented in Table 6-1 with exceedences of trigger levels for methane and carbon dioxide presented in Table 6-2. It should be noted that the trigger levels which the results are compared with in Table 6-2 are the site specific trigger levels proposed in the Gas Management Plan³ rather than those stated in the PPC Permit, which are the default trigger levels for non-hazardous waste landfill sites. Control charts are also presented within Appendix J.

Review of Table 6-2 highlights the following:

- Methane:
 - VF12 presented three exceedances of its methane trigger level (7.9 % vol.) on 07/062016 (18.6 % vol.), 07/09/2016 (15.3 % vol.) and 30/11/2016 (12.1 % vol.). Repeat testing conducted recorded methane concentrations below the trigger lev with 3.6, 7.4 and 1.4 % vol respectively; and
 - Monitoring locations VF1, VF4, VF6, VF7, VF8, VF9, VF10 and VF11 recorded their highest concentrations of methane during this monitoring period, however concentrations remained significantly below trigger levels.
- Carbon dioxide:
 - VF5 recorded two incidents of carbon dioxide trigger level (1.5 % vol.) exceedance on 07/09/2016 and 30/11/2016 with concentrations of 2.5 and 2.3 % vol respectively. Repeat sampling conduced recorded carbon dioxide concentrations below the trigger level with concentrations of 1.2 % vol on both exceedance incidents;
 - VF7 recorded two incidents of carbon dioxide trigger level (1.5 % vol.) exceedance on 07/09/2016 and 30/11/2016 with concentrations of 2.4 and 2.2 % vol respectively. Repeat sampling conduced recorded carbon dioxide concentrations below the trigger level with concentrations of 1.4 and 0.9 % vol on 07/09/2016 and 30/11/2016 respectively;
 - VF12 recorded an exceedance of its carbon dioxide trigger level (2.1 % vol.) on 07/09/2016 with a concentration of 2.4 % vol. It is noted that repeat sampling conducted recorded a concentration of 1.3 % vol.; and
 - VF10 continues to record the highest concentrations of carbon dioxide in monitored boreholes however concentrations remain below its trigger level (7.4 % vol.).
- Due to heavy rain, standpipes of monitoring wells VF3D and VF11 on 08/03/2016 were both flooded and gas analysis was not possible.

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³ SLR Consulting Limited, September 2009, Valleyfield Ash Lagoons - Gas Management Plan, Condition 8.1.1.

| Danahala | No of | | Oxygen (%) | | Atmosp | heric Pressu | ure (mb) | Differer | ntial Pressu | re (mb) |
|----------|----------|------|------------|------|--------|--------------|----------|----------|--------------|---------|
| Borenole | readings | min | mean | max | min | mean | max | min | mean | max |
| VF1 | 4 | 16.4 | 18.0 | 18.9 | 1004 | 1017 | 1028 | -2.16 | -0.33 | 0.43 |
| VF3D | 3 | 19.5 | 20.2 | 21.2 | 1017 | 1022 | 1027 | -0.19 | 0.48 | 1.07 |
| VF4 | 4 | 19.5 | 20.3 | 21.6 | 1011 | 1019 | 1028 | 0.00 | 0.07 | 0.24 |
| VF5 | 6 | 13.5 | 15.7 | 18 | 1005 | 1018 | 1027 | -0.10 | 0.51 | 2.12 |
| VF6 | 4 | 20.0 | 20.3 | 20.8 | 1004 | 1017 | 1026 | -0.12 | -0.01 | 0.17 |
| VF7 | 6 | 17.1 | 17.5 | 17.8 | 1004 | 1019 | 1029 | 0.12 | 1.66 | 3.21 |
| VF8 | 4 | 19.3 | 20.0 | 20.6 | 1003 | 1017 | 1028 | -13.67 | -3.40 | 0.05 |
| VF9 | 4 | 0 | 3.3 | 6.3 | 1011 | 1019 | 1027 | -0.07 | 0.19 | 0.65 |
| VF10 | 4 | 7.9 | 11.0 | 16.9 | 1005 | 1018 | 1028 | 0.03 | 0.11 | 0.17 |
| VF11 | 3 | 19.4 | 20.3 | 21 | 1017 | 1022 | 1027 | -0.02 | 0.00 | 0.02 |
| VF12 | 7 | 0.2 | 11.3 | 21.3 | 1003 | 1019 | 1029 | -27.69 | 2.00 | 21.87 |

 Table 6-1

 Summary of Oxygen, Atmospheric Pressure and Differential Pressure in Groundwater Monitoring Boreholes - 2016

16

Table 6-2

Summary of Methane and Carbon Dioxide Concentrations and Trigger Events in Gas Monitoring Boreholes - 2016

| | | | | Methane (%) | //v) | | | Carbon Dioxide (%v/v) | | | | | | | |
|-----------|-------------------|---------|---------|-------------|------------------|--|---------|-----------------------|---------|------------------|--|--|--|--|--|
| Boreholes | No of Readings | Minimum | Average | Maximum | Trigger Level | Trigger Events – Monitoring round: initial conc. (repeat conc.) | Minimum | Average | Maximum | Trigger Level | Trigger Events – Monitoring round: initial conc. (repeat conc.) | | | | |
| VF1 | 4 | 0.0 | 0.1 | 0.4 | 1.0 | - | 0.3 | 0.5 | 0.7 | 1.5 | - | | | | |
| VF3D | 3 | 0.2 | 0.3 | 0.4 | 3.4 | - | 0.1 | 0.2 | 0.2 | 1.5 | - | | | | |
| VF4 | 4 | 0.0 | 0.1 | 0.4 | 1.0 | - | 0 | 0.2 | 0.7 | 1.5 | - | | | | |
| VF5 | 6 | 0.4 | 3.2 | 7.3 | 12.8 | - | 0.8 | 1.5 | 2.5 | 1.5 | QM3: 2.5 (1.2) QM4: 2.3 (1.2) | | | | |
| VF6 | 4 | 0.0 | 0.1 | 0.4 | 1.0 | - | 0.1 | 0.3 | 0.3 | 1.5 | - | | | | |
| VF7 | 6 | 0.0 | 0.2 | 0.4 | 1.0 | - | 0.9 | 1.5 | 2.4 | 1.5 | QM3: 2.4 (1.4) QM4: 2.2 (0.9) | | | | |
| VF8 | 4 | 0.0 | 0.1 | 0.4 | 1.0 | - | 0.1 | 0.5 | 1.4 | 1.5 | - | | | | |
| VF9 | 4 | 0.0 | 0.1 | 0.4 | 1.0 | - | 0.1 | 0.4 | 0.9 | 1.5 | - | | | | |
| VF10 | 4 | 0.0 | 0.1 | 0.4 | 1.0 | - | 2 | 4.9 | 6.4 | 7.4 | - | | | | |
| VF11 | 3 | 0.0 | 0.3 | 0.5 | 1.0 | - | 0.1 | 0.2 | 0.2 | 1.5 | - | | | | |
| VF12 | 7 | 1.4 | 8.6 | 18.6 | 7.9 | QM2: 18.6 (3.6) QM3: 15.3 (7.4) QM4: 12.1 (1.4) | 0.5 | 1.3 | 2.4 | 2.1 | QM2: 2.4 (1.3) | | | | |

Note: Trigger levels are those stated in the Gas Management Plan, September 2009.

7.0 WASTE CHARACTERISATION

7.1 Topography of Site and Waste Inputs

Details of the site topography, waste inputs, the volume of cenospheres removed from site and the remaining lagoon capacities are reported separately to SEPA under separate conditions of the site PPC Permit.

No significant engineering works have been undertaken at the site during the reporting period and ash deposition occurred only during the first quarter of 2016.

7.2 Waste Characterisation

In accordance with the PPC Permit, sampling of the waste has been undertaken for the period whilst the Valleyfield site continued to accept ash from Longannet Power Station and the monitoring quarter immediately after (March and June 2016).

A single sample of the PFA waste was obtained as part of the quarterly monitoring suite in first and second quarters of 2016, which has undergone a 2-batch leachability testing, together with analysis of the solid waste. Results are presented in Appendix A.

The results from 2016 suggest that the solid waste typically has an alkaline pH of between 9.16 and 9.77, while organic carbon content is recorded at 11.8 and 6.76 % (classed as hazardous wastel) for samples collected 07/03/2016 and 06/06/2016 respectively, which is largely comparable to previous results. It is noted that leached dissolved organic carbon was below the LoD for samples collected in 2016. The vast majority of parameters, and in particular substances such as PAHs and PCBs, fall below the laboratory method detection limit.

Concentrations recorded during 2016 are similar to those recorded as part of the PPC Application and the previous Annual Monitoring Reviews.

8.0 ACTIONS AND RECOMMENDATIONS

The condition of the boreholes remains satisfactory after the remediation works undertaken in November / December 2013. The gas and groundwater monitoring equipment also remains in satisfactory condition and conforms to the original monitoring borehole designs agreed during the PPC permitting works.

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Longannet Power Station has ceased the deposition of ash to the Valleyfield Ash Lagoons, however it is proposed that quarterly monitoring in accordance with the details set out in the PPC Permit and supporting Management Plans continues during the post-closure phase until a timescale for monitoring reduction or cessation is agreed with SEPA.

9.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Scottish Power Generation Ltd; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.



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SLR Consulting Ltd Floor 2 4/5 Lochside View Edinburgh Park Edinburgh Lanarkshire EH12 9DH

Attention: Zak Ritchie

CERTIFICATE OF ANALYSIS

Date: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: 17 March 2016 H_SLR_EDH 160309-113 405.00481.00033 Valleyfields 353745

We received 16 samples on Wednesday March 09, 2016 and 16 of these samples were scheduled for analysis which was completed on Thursday March 17, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan Operations Manager



Alcontrol Laboratories is a trading division of ALcontrol UK Limited Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

| SDG: | 160309-113 | Location: | Valleyfields | Order Number: | 405/8371 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 353745 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Received Sample Overview

| Lab Sample No(s) | Customer Sample Ref. | AGS Ref. | Depth (m) | Sampled Date |
|------------------|----------------------|----------|-----------|--------------|
| 13060782 | ES1 | | | 07/03/2016 |
| 13060783 | ES2 | | | 07/03/2016 |
| 13060787 | PFA | | | 07/03/2016 |
| 13060785 | SN | | | 07/03/2016 |
| 13060784 | TD | | | 07/03/2016 |
| 13060790 | VF1 | | | 08/03/2016 |
| 13060788 | VF4 | | | 07/03/2016 |
| 13060793 | VF5 | | | 08/03/2016 |
| 13060794 | VF6 | | | 08/03/2016 |
| 13060795 | VF7 | | | 08/03/2016 |
| 13060796 | VF8 | | | 08/03/2016 |
| 13060789 | VF9 | | | 07/03/2016 |
| 13060797 | VF10 | | | 08/03/2016 |
| 13060798 | VF11 | | | 08/03/2016 |
| 13060799 | VF12 | | | 08/03/2016 |
| 13060792 | VF3D | | | 08/03/2016 |

Only received samples which have had analysis scheduled will be shown on the following pages.

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| SDG: Job: Client Reference: | 160309-113 H_SLR_EE 405.00481 | 3 0H-58 00033 | Location Custome Attentior | : er: | Va SL Za | alley R (ak R | field Con: itch | ds sulti ie | ing | Ltd | | | _ | | | | | C F S | Drde Rep Sup | er I ort ers | Nur Nu | nbe imt ed | er: ber Re | : poi | rt: | | 40 35 | 5/83 374 | 371 5 | I | | |
| Saline Water (Sal Results Legend X Test | W) | Lab Sam | ple No(s) | | 13060782 | | 13060783 | | 13060785 | | 13060784 | | | 13060700 | | 13060788 | | 13060793 | | 13060794 | | CEVNONEL | 100000 | | 13060796 | | 13060789 | | | 13060797 | 13060700 | |
| No Determination Possible | | Customer Sample Reference | | | ES1 | | ES2 | | SN | 2 | TD | | 4 | VE1 | | VF4 | | VF5 | | VF6 | | VF7 | V/F-7 | | VF8 | | 6HA | | ¢T ic | VE10 | 1/011 | |
| | | AGS Re | ference | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | - | Cont | ainer | 0.5l glass bottle (AL | 500ml Plastic (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE2 | 0.51 glass bottle (AL | 500ml Plastic (ALE2 | U.5I glass bottle (AL HNO3 Filtered (ALE | 500ml Plastic (ALE2 | HNO3 Filtered (ALE | 500ml Plastic (ALE2 | HNO3 Filtered (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE | 0.51 glass bottle (AL | 500ml Plastic (ALE2 | HNO3 Filtered (ALE | 0.51 glass bottle (AL | HNO3 Filtered (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE2 | U.5I glass bottle (AL | | |
| Anions by Kone (w) | | All | NDPs: 0 Tests: 15 | | x | | x | | x | | x | | x | | x | | x | | X | | | x | | x | | > | × | | x | | | |
| Conductivity (at 20 deg.C) | | All | NDPs: 0 Tests: 15 | | x | | x | | x | | x | | x | | x | | x | | x | | | x | | x | | , , | × | | x | | | |
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| PAH Spec MS - Aqueous (| (W) | All | NDPs: 0 Tests: 15 | x | | x | | x | | x | | x | | x | | × | | 2 | x | | x | | x | | | x | - | x | | > | <mark><</mark> | |
| pH Value | | All | NDPs: 0 Tests: 15 | | x | | x | | x | | x | | x | | x | | x | | x | | | x | | x | |) | × | | x | | | |

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|---|--|-------------------------|-----------------------------------|---|--|--|---|-----------|
| SDG: Job: Client Reference: | 160309-113 H_SLR_EDF 405.00481.0 | H-58 10033 | Location: Custome Attention | r: | Valleyfi SLR Co Zak Rit | elds onsulting chie | Drder Number: 405/8371 Ltd Report Number: 353745 Superseded Report: | |
| Saline Water (Sal W Results Legend X Test | V) | Lab Sample N | √o(s) | 13060798 | 13060799 | 13060792 | | |
| No Determinati Possible | on | Custome Sample Refer | r ence | VF11 | VF12 | VF3D | | |
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| Conductivity (at 20 deg.C) | A | JI | NDPs: 0 Tests: 15 | x | x | x | | |
| Dissolved Metals by ICP-MS | 3 A | JI | NDPs: 0 Tests: 15 | x | x | x | | |
| Metals by iCap-OES Dissolv | red (W) A | JI | NDPs: 0 Tests: 15 | x | x | x | | |
| PAH Spec MS - Aqueous (W | /) A | JI | NDPs: 0 Tests: 15 | | x | x | | |
| pH Value | A | JI | NDPs: 0 Tests: 15 | x | x | x | | |

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| SDG: Job: Client Reference: | 160309-11 H_SLR_EI 405.00481 | 3 DH-58 .00033 | Location: Customer Attention | Va r: SL : Za | Ileyfields R Consulting Ltd k Ritchie | Order Number: Report Number: Superseded Report: | 405/8371 353745 | | | |
| SOLID | | - | | | 1 | | | | | |
| Results Legend | | Lab San | nple No(s) | 13060 | | | | | | |
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| | 140 | A.II. | | x | - | | | | | |
| Dissolved Metals by ICP | -1015 | All | NDPs: 0 Tests: 1 | . | | | | | | |
| Dissolved Organic/Inorg | anic | All | NDPs' 0 | ^ | - | | | | | |
| Carbon | | | Tests: 1 | x | | | | | | |
| Fluoride | | All | NDPs: 0 | <u>^</u> | - | | | | | |
| | | | Tests: 1 | x | | | | | | |
| GRO by GC-FID (S) | | All | NDPs: 0 | | - | | | | | |
| | | | Tests: 1 | X | | | | | | |
| Loss on Ignition in soils | | All | NDPs: 0 | | | | | | | |
| | | | Tests: 1 | x | | | | | | |
| Mercury Dissolved | | All | NDPs: 0 | | 1 | | | | | |
| | | | lests: 1 | x | | | | | | |
| Mineral Oil | | All | NDPs: 0 | | 1 | | | | | |
| | | | 10000. 1 | x | | | | | | |
| PAH Value of soil | | All | NDPs: 0 Tests: 1 | | | | | | | |
| | | | | x | | | | | | |
| PCBs by GCMS | | All | NDPs: 0 Tests: 1 | | | | | | | |
| | | | | x | | | | | | |
| рН | | All | NDPs: 0 Tests: 1 | | | | | | | |
| | | A.II. | | X | | | | | | |
| Phenois by HPLC (W) | | All | NDPs: 0 Tests: 1 | | | | | | | |
| Operando el construcción de | | A.II. | | X | - | | | | | |
| Sample description | | All | NDPs: 0 Tests: 1 | | | | | | | |
| | | | | X | | | | | | |

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| | | | CE | RTI | FICATE OF ANALYSIS | | | |
| SDG: Job: Client Reference: | 160309-113 H_SLR_EDF 405.00481.0 | H-58 10033 | Location: Customer: Attention: | Val : SLI Zal | leyfields R Consulting Ltd k Ritchie | Order Number: Report Number: Superseded Report: | 405/8371 353745 | |
| SOLID Results Legend | | Lab Sample N | o(s) | 13060787 | | | | |
| No Determina Possible | ation | Customer Sample Refere | ence | PFA | | | | |
| | | AGS Referer | nce | | | | | |
| | | Depth (m) | | | | | | |
| | | Container | | 60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (Al | | | | |
| Total Dissolved Solids | A | NII | NDPs: 0 Tests: 1 | x | Ţ | | | |
| Total Organic Carbon | A | NI | NDPs: 0 Tests: 1 | x | | | | |

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| | | CEF | RTIFICATE OF ANALYSIS | 5 | | |
| SDG: | 160309-113 | Location: | Valleyfields | Order Number: | 405/8371 | |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 353745 | |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | | |
| | | | | | | |

Sample Descriptions

| Grain Sizes | | | | | | | | | | | | |
|-------------|-------|--------|--------------|-----------------|--------|-------|------------|------|-----------------|-------|----------|--------------|
| very fine | <0.0 | 063mm | fine | 0.063mm - 0.1mm | medium | 0.1mm | n - 2mm | coai | rse 2mm - 1 | 0mm | very coa | rse >10r |
| Lab Sample | No(s) | Custom | er Sample Re | f. Depth (m) | C | olour | Descript | ion | Grain size | Inclu | usions | Inclusions 2 |
| 1306078 | 37 | | PFA | | (| Grey | Sandy Silt | Loam | 0.063 - 2.00 mm | N | one | None |

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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CERTIFICATE OF ANALYSIS

Validated

| Results Legend | | Customer Sample R | ES1 | ES2 | PFA | SN | TD | VF1 |
|--|----------------|-----------------------------|----------------------|----------------------|-------------|-------------------------|----------------------|----------------------|
| # ISO17025 accredited. | | | 201 | 202 | | 0.11 | .5 | |
| M mCERTS accredited. | | | | | | | | |
| diss.filt Dissolved / filtered sample. | | Depth (m) | | | | | | |
| tot.unfilt Total / unfiltered sample. | | Sample Type | Saline Water (Sal W) | Saline Water (Sal W) | Soil/Solid | Saline Water (Sal W) | Saline Water (Sal W) | Saline Water (Sal W) |
| * Subcontracted test. ** % recovery of the surrogate standa | rd to | Date Sampled Sample Time | 07/03/2016 | 07/03/2016 | 07/03/2016 | 07/03/2016 | 07/03/2016 | 08/03/2016 |
| check the efficiency of the method. | The | Date Received | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 |
| results of individual compounds wi | thin | SDG Ref | 160309-113 | 160309-113 | 160309-113 | 160309-113 | 160309-113 | 160309-113 |
| (F) Trigger breach confirmed | ,orony | Lab Sample No.(s) | 13060782 | 13060783 | 13060787 | 13060785 | 13060784 | 13060790 |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | | |
| Component | LOD/Un | its Method | 07.0 | 00.0 | | | 00.0 | 04.0 |
| Conductivity @ 20 deg.C | <0.00 | 5 1M120 | 37.2 | 36.6 | | 30.8 | 22.9 | 24.3 |
| | mS/cr | n | # | # | | # | # | # |
| Antimony (diss.filt) | <0.000 | 16 TM152 | 0.00665 | <0.00016 | | 0.0337 | 0.00192 | 0.00782 |
| | mg/l | | | | | | | |
| Arsenic (diss.filt) | <0.000 | 12 TM152 | 0.0379 | 0.0139 | | 0.132 | 0.00821 | 0.00903 |
| | mg/l | | # | # | | # | # | # |
| Boron (diss.filt) | < 0.00 | 94 TM152 | 4.31 | 3.79 | | 7.38 | 11.4 | 0.974 |
| | ma/l | | # | # | | # | # | # |
| Cadmium (diss filt) | <0.00 | 1 TM152 | <i></i> <0.001 | 0.000109 | | <0.001 | 0.00083 | <i></i> <0.001 |
| Cadmian (diss.int) | ~0.000 ma/l | 1111132 | ~0.001 | 0.000103 | | ×0.001 # | 0.00003 # | <0.001 # |
| Observatives (diag filb) | -0.000 | | # | # | | # | # | # |
| Chromium (diss.nit) | <0.000 | 22 11/152 | 0.021 | 0.00547 | | 0.0913 | 0.00136 | 0.00397 |
| | mg/i | | # | # | | # | # | # |
| Manganese (diss.filt) | <0.000 | 04 TM152 | 0.00909 | 0.0165 | | 0.00471 | 0.119 | 0.179 |
| | mg/l | | # | # | | # | # | # |
| Molybdenum (diss.filt) | <0.000 | 24 TM152 | 0.165 | 0.0548 | | 0.41 | 0.582 | 0.0382 |
| | mg/l | | # | # | | # | # | # |
| Selenium (diss.filt) | <0.000 | 39 TM152 | 0.124 | 0.0723 | | 0.444 | 0.0202 | 0.0394 |
| . , | ma/l | - | # | # | | # | # | # |
| Vanadium (diss filt) | <0 000 | 24 TM152 | 0.0873 | 0,00327 | | 0 467 | 0 0598 | <0 0024 |
| | ma/l | | | 5.00021 # | | 0. - 01 # | | ·0.0024 # |
| Sulphoto | <0 m | ~/ | π | π | | 7500 | π | π 000 |
| Sulphate | <2 m | g/i 11/1184 | 2320 | 2320 | | 2500 | 1430 | 923 |
| | | | # | # | | # | # | # |
| Chloride | <2 m | g/I TM184 | 16200 | 17600 | | 17500 | 9230 | 11800 |
| | | | # | # | | # | # | # |
| Sodium (diss.filt) | <0.07 | 6 TM228 | 7990 | 7390 | | 8190 | 4530 | 4410 |
| | mg/l | | # | # | | # | # | # |
| Magnesium (diss.filt) | < 0.03 | 6 TM228 | 1110 | 970 | | 965 | 219 | 558 |
| 3 () | ma/l | | # | # | | # | # | # |
| nH | <1 nł | H TM256 | 8.5 | 7 85 | | 9.28 | 8 4 1 | 74 |
| P.1 | Units | 1 111200 | 0.0 # | # | | 0.20 # | ± | # |
| Maiatura Contant Batia (% | 0/ | DM024 | <i>#</i> | TT TT | 40 | π | T T | п |
| of as received sample) | 70 | FIVIU24 | | | 40 | | | |
| | .0.7 | 0/ TM040 | | | 7.00 | | | |
| Loss on ignition | <0.7 | % IMU18 | | | 7.28 | | | |
| | | | | | M | | | |
| Mineral oil >C10-C40 | <1 mg | /kg TM061 | | | 3.73 | | | |
| | | | | | | | | |
| Mineral Oil Surrogate % | % | TM061 | | | 92 | | | |
| recovery** | | | | | | | | |
| Organic Carbon, Total | <0.2 | % TM132 | | | 11.8 | | | |
| - | | | | | М | | | |
| н | 1 n⊢ | TM133 | | | 9 77 | | | |
| F | Units | | | | М | | | |
| PCB congener 28 | <0.00 | 3 TM168 | | | <0.003 | | | |
| | -0.00 ma/ka | | | | -0.000 M | | | |
| PCB congener 52 | -0.00 | 2 TM460 | | | | | | |
| r ob congener 52 | <0.00 ma// | 0 INTOX | | | ~0.003 | | | |
| | mg/K | | | | M | | | |
| PCB congener 101 | <0.00 | 3 IM168 | | | <0.003 | | | |
| | mg/kę |] | | | M | | | |
| PCB congener 118 | <0.00 | 3 TM168 | | | < 0.003 | | | |
| | mg/kę | 9 | | | М | | | |
| PCB congener 138 | <0.00 | 3 TM168 | | | < 0.003 | | | |
| | mg/kę | g | | | Μ | | | |
| PCB congener 153 | <0.00 | 3 TM168 | | | <0.003 | | | |
| | ma/ka | a | | | M | | | |
| PCB congener 180 | <0.00 | - 3 TM168 | | | <0.003 | | | |
| | -0.00 ma/kr | 1 | | | -0.000 M | | | |
| Sum of detected BCD 7 | -0 00 | | | | | | | |
| Congeners | <0.02 ~~// | .i iIVI108 | | | SU.021 | | | |
| | mg/K | | | | 0.070 | | | |
| ANC @ pH 4 | <0.0 | 3 TM182 | | | 0.276 | | | |
| | mol/k | g | | | | | | |
| ANC @ pH 6 | <0.0 | 3 TM182 | | | 0.166 | | | |
| | mol/k | g | | | | | | |
| Polyaromatic | <10 | TM213 | | | <10 | | | |
| hydrocarbons, Total 17 | mg/kg | 9 | | | | | | |
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Validated

| SDG: | 160309-113 | Location: | Valleyfields | Order Number: | 405/8371 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 353745 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

| Results Legend | | Customer Sample R | VF4 | VF5 | VF6 | VF7 | VF8 | VF9 |
|---|----------------|-------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| # ISO17025 accredited. | | | | | | | | |
| ag Aqueous / settled sample. | | | | | | | | |
| diss.filt Dissolved / filtered sample. | | Depth (m) | Calina Mater (Cal M) | Calina Water (Cal W) | Calina Water (Cal W) | Coline Water (Col W) | Calina Water (Cal W) | Calina Water (Cal W) |
| tot.unfilt Total / unfiltered sample. * Subcontracted test. | | Date Sampled | 07/03/2016 | 08/03/2016 | 08/03/2016 | 08/03/2016 | 08/03/2016 | 07/03/2016 |
| ** % recovery of the surrogate standa | rd to | Sample Time | | | | | | |
| check the efficiency of the method. | The thin | Date Received | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 |
| samples aren't corrected for the rec | covery | SDG Ref | 160309-113 | 160309-113 | 160309-113 | 160309-113 | 160309-113 | 160309-113 |
| (F) Trigger breach confirmed | | Lab Sample No.(s) | 13060788 | 13060793 | 13060794 | 13060795 | 13060796 | 13060789 |
| Component | | AGS Reference | | | | | | |
| Conductivity @ 20 deg C | | 15 TM120 | 22.3 | 16.1 | 18.7 | 20.3 | 26.6 | 26.2 |
| Conductivity @ 20 deg.0 | -0.00 mS/cr | m | 22.0 # | 10.1 | 10.7 | 20.0 # | 20.0 # | 20.2 |
| | 110/0 | | # | # | # | # | # | # |
| Antimony (diss.filt) | <0.000 | 016 IM152 | 0.000167 | 0.000429 | 0.00125 | 0.000189 | <0.00016 | <0.0016 |
| | mg/l | | | | | | | |
| Arsenic (diss.filt) | <0.000 | 12 TM152 | 0.00171 | 0.00838 | 0.0257 | 0.00582 | 0.0073 | 0.00584 |
| | mg/l | | # | # | # | # | # | # |
| Boron (diss.filt) | < 0.00 | 94 TM152 | 9.74 | 1.97 | 10 | 0.458 | 0.961 | 1.57 |
| | ma/l | | # | | | # | # | # |
| | -0.00 | | π 0.000500 | π | π | π | π | π |
| Cadmium (diss.nit) | <0.00 | 01 110152 | 0.000596 | <0.0001 | 0.000617 | <0.0001 | 0.000504 | <0.001 |
| | mg/I | | # | # | # | # | # | # |
| Chromium (diss.filt) | <0.000 | 022 TM152 | 0.0024 | 0.00312 | 0.00164 | 0.00219 | 0.00388 | 0.00382 |
| | mg/l | | # | # | # | # | # | # |
| Manganese (diss.filt) | <0.000 | 04 TM152 | 0.107 | 0.0252 | 0.0514 | 0.312 | 0.296 | 0.455 |
| <u> </u> | ma/l | | # | # | # | # | # | # |
| Molybdenum (diss filt) | <0.000 | 124 TM452 | Π 382 U | 0 00084 | 0 462 # | μ Π 0122 | π 0 347 | 0 105 |
| | ~0.000 | | 0.307 | 0.00064 ,, | 0.403 | 0.0123 | 0.347 ,, | 0.105 |
| | mg/l | | # | # | # | # | # | # |
| Selenium (diss.filt) | <0.000 | 039 TM152 | 0.00573 | 0.106 | 0.0142 | 0.0246 | 0.0469 | 0.0351 |
| | mg/l | | # | # | # | # | # | # |
| Vanadium (diss.filt) | <0.000 |)24 TM152 | <0.00024 | 0.00842 | 0.0403 | < 0.00024 | 0.000286 | 0.00491 |
| , , , , , , , , , , , , , , , , , , , | ma/l | | # | # | # | # | # | # |
| Sulphate | <2 m | a/l TM184 | 1350 | 241 | | | 1650 | 7/8 |
| Suprate | ~2 m | g/i 11v1104 | 1550 | 241 | ۵۱۵ س | 404 | 1050 # | /40 |
| | | | # | # | # | # | # | # |
| Chloride | <2 m | g/l TM184 | 8860 | 7160 | 7540 | 9970 | 10800 | 11800 |
| | | | # | # | # | # | # | # |
| Sodium (diss.filt) | <0.07 | 76 TM228 | 3900 | 3190 | 3500 | 3200 | 4790 | 5330 |
| , , , , , , , , , , , , , , , , , , , | ma/l | | # | # | # | # | # | # |
| Magnesium (diss filt) | <0.03 | 26 TM228 | | 270 | 54.7 | 407 | 504 | 606 |
| Magnesium (diss.int) | ~0.0C | 111/220 | 410 4 | 219 11 | J4.7 | 451 | - 1 | 090 |
| | mg/i | | # | # | # | # | # | # |
| рН | <1 pl | H TM256 | 7.63 | 8.38 | 8.15 | 7.43 | 7.67 | 7.27 |
| | Units | 6 | # | # | # | # | # | # |
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CERTIFICATE OF ANALYSIS

| Results Legend | | Customer Sample R | VF10 | VF11 | VF12 | VF3D | |
|---|----------------|-------------------|------------------------|------------------------|------------------------|------------------------|------|
| # ISO17025 accredited. M mCERTS accredited. | | | | | | | |
| aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. | | Depth (m) | | | | | |
| tot.unfilt Total / unfiltered sample. | | Sample Type | Saline Water (Sal W) | |
| ** % recovery of the surrogate standa | rd to | Sample Time | | | | | |
| check the efficiency of the method. results of individual compounds wi | The thin | Date Received | 09/03/2016 | 09/03/2016 | 09/03/2016 | 09/03/2016 | |
| samples aren't corrected for the rec | overy | SDG Ref | 160309-113 13060797 | 160309-113 13060798 | 160309-113 13060799 | 160309-113 13060792 | |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | |
| Component | LOD/Ur | nits Method | | | | | |
| Conductivity @ 20 deg.C | <0.00 | 05 IM120 | 16.4 | 1.97 | 1.24 | 5.43 | |
| Asthered (disc 510) | m5/cr | | # | # | # | # | |
| Antimony (diss.fiit) | <0.000 | 016 IM152 | 0.00185 | <0.00016 | 0.000402 | 0.000239 | |
| Aroopia (diaa filt) | <0.000 | 12 TM152 | 0.00701 | 0.000462 | 0.0006 | 0.00226 | |
| | -0.000 ma/l | | 0.00701 | 0.000405 | 0.0000 # | 0.00220 | |
| Boron (diss filt) | <0.00 | 94 TM152 | 9 78 | 0 334 | 0 343 | | |
| | ma/l | | # | # | # | # | |
| Cadmium (diss.filt) | < 0.00 | 01 TM152 | 0.000439 | <0.0001 | <0.0001 | <0.0001 | |
| | mg/l | | # | # | # | # | |
| Chromium (diss.filt) | <0.000 |)22 TM152 | 0.00263 | 0.00286 | 0.0019 | 0.00186 | |
| | mg/l | | # | # | # | # | |
| Manganese (diss.filt) | <0.000 | 004 TM152 | 0.269 | 0.0762 | 0.0624 | 0.178 | |
| | mg/l | | # | # | # | # | |
| Molybdenum (diss.filt) | <0.000 |)24 TM152 | 0.233 | 0.000458 | 0.00193 | 0.00136 | |
| | mg/l | | # | # | # | # | |
| Selenium (diss.filt) | <0.000 | 039 TM152 | 0.0233 | 0.00239 | 0.00075 | 0.0132 | |
| | mg/l | | # | # | # | # | |
| Vanadium (diss.filt) | <0.000 | 024 TM152 | 0.000437 | 0.000626 | 0.000606 | 0.00108 | |
| | mg/l | | # | # | # | # | |
| Sulphate | <2 m | g/l TM184 | 625 | 15.2 | <2 | 2.3 | |
| | | | # | # | # | # | |
| Chloride | <2 m | g/l TM184 | 6710 | 477 | 254 | 1860 | |
| | | | # | # | # | # | |
| Sodium (diss.filt) | <0.07 | 76 TM228 | 3190 | 299 | 140 | 903 | |
| | mg/l | T 4000 | # | # | # | # | |
| Magnesium (diss.filt) | <0.03 | 36 I M228 | 226 | 28.9 | 19.9 | 96.5 | |
| | | | 7.61 | 7.52 | * | 7 75 | |
| рп | < i pi | | 7.01 | 1.52 | 0.02 | 1.15 | |
| | Office | , | # | π | # | # | |
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| ALcontrol Lab | oratories | 3 | CE | т | | | | | Validated |
|--|--|---|--|----------|---------------------------------|---|------------|--------------------|-----------|
| SDG: 16 Job: H_ Client Reference: 40 | 0309-113 _SLR_EDH- 5 00481 00 | 58 | Location: Customer: | Va Sl | Illeyfields R Consulting Ltd | Order Number: Report Number Superseded Re | : port: | 405/8371 353745 | |
| GRO by GC-FID (S) | 5.00401.00 | 000 | Attention. | 20 | | ouperseulerite | port. | | |
| Results Legend # ISO17025 accredited. | | Customer Sample R | PFA | | | | | | |
| aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. * % recovery of the surrogates i check the efficiency of the me results of individual compoun samples aron't corrected for th | andard to thod. The ds within ne recovery | Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref | Soil/Solid 07/03/2016 09/03/2016 160309-113 13060787 | | | | | | |
| (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see append | ix) | AGS Reference | 10000101 | | | | | | |
| Component Methyl tertiary butyl ether | LOD/U | nits Method | <0.01 | | | | | | |
| (MTBE) | mg/k | sg | -0.01 | # | | | | | |
| Benzene | <0.0 mg/k |)1 TM089 sg | <0.02 | м | | | | | |
| Toluene | <0.0 mg/k | 02 TM089 sg | <0.004 | М | | | | | |
| Ethylbenzene | <0.0 mg/k | 03 TM089 .g | <0.006 | М | | | | | |
| m,p-Xylene | <0.0 mg/k | 06 TM089 sg | <0.012 | М | | | | | |
| o-Xylene | <0.0 mg/k | 03 TM089 sg | <0.006 | М | | | | | |
| sum of detected mpo xylene by GC | <0.0 mg/k | 09 TM089 ig | <0.009 | | | | | | |
| sum of detected BTEX by GC | <0.0 mg/k | 24 TM089 sg | <0.024 | | | | | | |
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| | oratories | , | CERT | IFICATE OF A | ANALYSIS | | | vanualeu |
|--|--|---|--|--|--------------------------------------|---|--------------------------------------|--------------------------------------|
| SDG: 16 Job: H Client Reference: 40 | 60309-113 _SLR_EDH⊣ 05.00481.000 | 58 033 | Location: V Customer: S Attention: Z | alleyfields ER Consulting Ltd ak Ritchie | | Order Number: Report Number Superseded Re | 405/8371 : 353745 port: | |
| AH Spec MS - Aque | ous (W) | - | | | | | | |
| Results Legend # ISO17025 accredited. M mCERTS accredited. | | Customer Sample R | ES1 | ES2 | SN | TD | VF1 | VF4 |
| aq Aqueous / settied sample. diss.filt Dissolved / filtered sample. total / unfiltered sample. * Subcontracted test. * % recovery of the surrogate s book the officiancy of the m | standard to | Depth (m) Sample Type Date Sampled Sample Time | Saline Water (Sal W) 07/03/2016 | Saline Water (Sal W) 07/03/2016 | Saline Water (Sal W) 07/03/2016 | Saline Water (Sal W) 07/03/2016 | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 07/03/2016 |
| results of individual compour samples aren't corrected for (F) Trigger breach confirmed | nds within the recovery | Date Received SDG Ref Lab Sample No.(s) | 09/03/2016 160309-113 13060782 | 09/03/2016 160309-113 13060783 | 09/03/2016 160309-113 13060785 | 09/03/2016 160309-113 13060784 | 09/03/2016 160309-113 13060790 | 09/03/2016 160309-113 13060788 |
| Component | LOD/U | nits Method | | | | | | |
| Naphthalene (aq) | <0.00 mg/ | 01 TM178 I | <0.0001 # | <0.0001 | <0.0001 # | <0.0001 # | <0.0001 # | <0.0001 |
| Acenaphthene (aq) | <0.0000 | TM178 015 | <0.000015 # | <0.000015 | 0.000026 # | <0.000015 # | <0.000015 # | <0.000015 |
| Acenaphthylene (aq) | <0.000 | TM178 011 | <0.000011 # | <0.000011 | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 |
| Fluoranthene (aq) | <0.0000 | TM178 | <0.000017 # | <0.000017 | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 |
| Anthracene (aq) | <0.0000 | TM178 015 | <0.000015 # | <0.000015 | <0.000015 # | <0.000015 # | <0.000015 # | <0.000015 |
| Phenanthrene (aq) | <0.0000 | TM178 | <0.000022 # | <0.000022 | <0.000022 | <0.000022 # | <0.000022 # | <0.000022 |
| Fluorene (aq) | <0.0000 | TM178 | <0.000014 # | <0.000014 | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 |
| Chrysene (aq) | <0.0000 | TM178 | <0.000013 # | <0.000013 # | <0.000013 # | <0.000013 # | <0.000013 # | <0.000013 |
| Pyrene (aq) | <0.0000 | TM178 | <0.000015 # | <0.000015 | <0.000015 # | <0.000015 # | <0.000015 # | <0.000015 |
| Benzo(a)anthracene (aq) | <0.0000 | TM178 | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 |
| Benzo(b)fluoranthene (aq) | <0.000 | TM178 | <0.000023 | <0.000023 | <0.000023 # | <0.000023 # | <0.000023 # | <0.000023 |
| Benzo(k)fluoranthene (aq) | <0.0000 | TM178 | <0.000027 # | <0.000027 | <0.000027 # | <0.000027 # | <0.000027 # | <0.000027 |
| Senzo(a)pyrene (aq) | <0.0000 | TM178 | <0.000009 # | <0.00009 | <0.00009 | <0.00009 # | <0.00009 # | <0.00009 |
| Dibenzo(a,h)anthracene aq) | <0.0000 | TM178 | <0.000016 # | <0.000016 | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 |
| Benzo(g,h,i)perylene (aq) | <0.0000 | TM178 | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 |
| ndeno(1,2,3-cd)pyrene aq) | <0.0000 | TM178 | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 |
| PAH, Total Detected JSEPA 16 (aq) | <0.0003 | TM178 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 |
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| | atories | 2 | CERT | IFICATE OF A | NALYSIS | | | valluated |
|--|--------------------------------|---|--|---|--------------------------------------|---|--------------------------------------|--------------------------------------|
| SDG: 1603 Job: H_SI Client Reference: 405.0 | 09-113 LR_EDH- 00481.000 | 58 033 | Location: V Customer: S Attention: Z | ′alleyfields SLR Consulting Ltd ′ak Ritchie | | Order Number: Report Number Superseded Re | 405/8371 : 353745 port: | |
| AH Spec MS - Aqueou | s (W) | | | | | | | |
| Results Legend # ISO17025 accredited. M mCERTS accredited. | | Customer Sample R | VF5 | VF6 | VF7 | VF8 | VF9 | VF10 |
| aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. ot.unfilt Total / unfiltered sample. * Subcontracted test. * % recovery of the surrogate stanc check the efficiency of the method | lard to | Depth (m) Sample Type Date Sampled Sample Time | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 07/03/2016 | Saline Water (Sal W 08/03/2016 |
| results of individual compounds v samples aren't corrected for the n | within ecovery | Date Received SDG Ref | 09/03/2016 160309-113 13060793 | 09/03/2016 160309-113 13060794 | 09/03/2016 160309-113 13060795 | 09/03/2016 160309-113 13060796 | 09/03/2016 160309-113 13060789 | 09/03/2016 160309-113 13060797 |
| -5&+§@ Sample deviation (see appendix) | | AGS Reference | 10000100 | 10000101 | 10000100 | 10000100 | 10000100 | |
| Component Naphthalene (aq) | <0.00 | nits Method 01 TM178 | <0.001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| cenaphthene (ag) | mg/l | I TM178 | # <0.00015 | # <0.000015 | # <0.000015 | # | # | <0.000015 |
| | <0.0000 |)15 TM179 | # | # | # | # | # | <0.000011 |
| cenaphinylene (aq) | <0.000 | D11 | <0.00011 | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 |
| luoranthene (aq) | <0.0000 | TM178 | <0.00017 | <0.000017 | <0.000017 # | <0.000017 # | <0.000017 | <0.000017 |
| Anthracene (aq) | <0.0000 | TM178 | <0.00015 | <0.000015 | <0.000015 # | <0.000015 # | <0.000015 | <0.000015 |
| Phenanthrene (aq) | <0.000 | TM178 | <0.00022 | <0.000022 | <0.000022 | <0.000022 | <0.000022 | <0.000022 |
| Fluorene (aq) | | TM178 | # <0.00014 | <pre>#</pre> | # <0.000014 ,, | # <0.000014 | # <0.000014 | <0.000014 |
| Chrysene (aq) | | TM178 | # <0.00013 | <0.000013 | # <0.000013 | # <0.000013 | # <0.000013 | <0.000013 |
| Pyrene (aq) | <0.0000 | TM178 | # <0.00015 | # <0.000015 | # <0.000015 | # <0.000015 | # <0.000015 | 0.000023 |
| Benzo(a)anthracene (aq) | <0.0000 | 015 TM178 | # <0.00017 | # # <0.000017 | # <0.000017 | # <0.000017 | # <0.000017 | <0.000017 |
| Benzo(b)fluoranthene (aq) | <0.0000 | 017 TM178 | # <0.00023 | # # <0.000023 | # <0.000023 | # <0.000023 | # <0.000023 | <0.000023 |
| Benzo(k)fluoranthene (aq) | <0.0000 | 023 TM178 | # <0.00027 | # <0.000027 | # <0.000027 | # | # <0.000027 | <0.000027 |
| Benzo(a)pyrene (aq) | <0.0000 | 027 TM178 | # | # # <0.000009 | # <0.00009 | # | # <0.00009 | <0.00009 |
|)ibenzo(a.h)anthracene | <0.0000 | 009 TM178 | # <0.00016 | # <0.000016 | # <0.000016 | # | # <0.000016 | <0.000016 |
| aq) | <0.0000 | 016 TM179 | <0.00016 | <pre>#</pre> | <0.000016 | <0.000016 | <0.000016 | <0.000016 |
| | <0.0000 | 016 | ~0.00010 # | ×0.000010 # | <0.000010 # | ~0.000010 # | ~0.000010 # | NU.UUUU 10 |
| ndeno(1,2,3-cd)pyrene aq) | <0.0000 | IM178 014 | <0.00014 # | <0.000014 | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 |
| PAH, Total Detected JSEPA 16 (aq) | <0.0003 | TM178 344 | <0.00344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 |
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| | 160200 1 | 113 | | | | | Order Number: | 405/8371 | |
|--|--|---------------------|-----------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------|----------|--|
| Job: | H_SLR_E | EDH-58 | 8 | Customer: SL | R Consulting Ltd | | Report Number: | 353745 | |
| Client Reference: | 405.0048 | 31.0003 | 33 | Attention: Za | ak Ritchie | | Superseded Report: | | |
| Results Leg # ISO17025 accredited | gend | N) | Customer Sample R | VF11 | VF12 | VF3D | | | |
| M mCERTS accredited. aq Aqueous / settled sar | nple. | | Depth (m) | | | | | | |
| diss.filt Dissolved / filtered sa ot.unfilt Total / unfiltered sam * Subcontracted test. | ample. ple. | | Sample Type Date Sampled | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 08/03/2016 | Saline Water (Sal W) 08/03/2016 | | | |
| ** % recovery of the su check the efficiency of | rogate standard to of the method. The | | Sample Time | 09/03/2016 | | | | | |
| results of individual o samples aren't correc | compounds within the recover | ry | SDG Ref | 160309-113 | 160309-113 | 160309-113 | | | |
| (F) Trigger breach confir 5&+§@ Sample deviation (se | med e appendix) | 0.0.41 | AGS Reference | 13000730 | 13000733 | 13000732 | | | |
| aphthalene (aq) | L | <0.000 | 1 TM178 | <0.0001 | <0.0001 | <0.0001 | | | |
| cenaphthene (ag) | | mg/l | TM178 | # | # <0.000015 | # <0.000015 | | | |
| | <0 | 0.00001 | 15 | # | # | # | | | |
| cenaphthylene (aq) | <0 | 0.0000 ⁻ | TM178 11 | <0.000011 # | <0.000011 # | <0.000011 # | | | |
| uoranthene (aq) | | 0000 | TM178 | <0.000017 | 0.000035 | <0.000017 | | | |
| nthracene (aq) | <0 | 1.00001 | TM178 | # <0.000015 | # <0.000015 | # <0.000015 | | | |
| | <0 | 0.00001 | 15 | # | # | # | | | |
| nenanthrene (aq) | <0 | 0.00002 | 1M178 22 | <0.000022 # | 0.000029 # | <0.000022 # | | | |
| luorene (aq) | | | TM178 | <0.000014 | <0.000014 " | <0.000014 | | | |
| hrysene (aq) | <0 | .00001 | TM178 | # | # <0.000013 | # <0.000013 | | | |
| | <0 | 0.00001 | 13 TM170 | # <0.00015 | # | # | | | |
| yrene (aq) | <0 | 0.00001 | 15 | ~0.000015 | 0.000073 | ~0.000015 # | | | |
| enzo(a)anthracene | (aq) |) 00001 | TM178 | <0.000017 | <0.000017 # | <0.000017 | | | |
| enzo(b)fluoranthene | e (aq) | | TM178 | <0.000023 | <0.00023 | <0.00023 | | | |
| enzo(k)fluoranthen | <0> (au) | 0.00002 | 23 TM178 | # <0.00027 | # <0.00027 | # <0.000027 | | | |
| | <0 | 0.00002 | 27 | -0.000027 | -0.000027 | -0.000027 # | | | |
| enzo(a)pyrene (aq) | <0 | 0.0000 | TM178 | <0.000009 # | <0.00009 # | <0.00009 # | | | |
| ibenzo(a,h)anthrace | ene | | TM178 | <0.000016 | <0.000016 | <0.000016 | | | |
| enzo(g,h,i)pervlene | (aq) | 1.00001 | тм178 | # <0.000016 | # <0.000016 | # <0.000016 | | | |
| | <0 | 0.00001 | 16 | # | # | # | | | |
| ideno(1,2,3-cd)pyre aq) | ne <0 | 0.00001 | TM178 | <0.000014 # | <0.000014 # | <0.000014 # | | | |
| AH, Total Detected | -0 | 0003/ | TM178 | <0.000344 | <0.000344 | <0.000344 | | | |
| SEFA TO (aq) | ~0 | .0003- | ** | | | | | | |
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SDG:

Job:

Client Reference:

160309-113

H_SLR_EDH-58

405.00481.00033

CERTIFICATE OF ANALYSIS

Valleyfields

Zak Ritchie

SLR Consulting Ltd

Location:

Customer:

Attention:

Validated

REF : BS EN 12457/2

405/8371

353745

Order Number:

Report Number:

Superseded Report:

0.06

0.1

4

800

10

1000

4000

1

500

0.7

0.5

50

15000

150

20000

60000

800

5

7

200

25000

500

50000

100000

1000

< 0.0016

< 0.0039

< 0.0041

<20

<5

<20

<50

<0.16

<30

| CEN 10:1 SINGLE | STAGE | LEACHATE | TEST |
|------------------------|-------|----------|------|
|------------------------|-------|----------|------|

WAC ANALYTICAL RESULTS

| Client Reference | | Site Location | Valleyfield |
|-------------------------|-------|------------------------------|-------------|
| Mass Sample taken (kg) | 0.146 | Natural Moisture Content (%) | 62.4 |
| Mass of dry sample (kg) | 0.175 | Dry Matter Content (%) | 61.6 |
| Particle Size <4mm | >95% | | |

| Case SDG | ase DG 160309-113 | |
|--------------------------|----------------------|--|
| Lab Sample Number(s) | 13060787 | |
| Sampled Date | 07-Mar-2016 | |
| Customer Sample Ref. | PFA | |
| Depth (m) | | |
| Solid Waste Analysis | Result | |
| Total Organic Carbon (%) | 11.8 | |
| Loss on Ignition (%) | 7.28 | |
| Sum of BTEX (mg/kg) | <0.024 | |
| Sum of 7 PCBs (mg/kg) | <0.021 | |
| Mineral Oil (mg/kg) | 3.73 | |
| ALL Sum of 17 (mg/kg) | <10 | |

| PAH Sum of 17 (mg/kg) | <10 | | | | 100 | - | - | |
|--------------------------|---------------------------------------|--------------------|---------------------------|--------------------|---|-----|-----|--|
| pH (pH Units) | 9.77 | | | | - | <6 | - | |
| ANC to pH 6 (mol/kg) | 0.166 | | | | - | - | - | |
| ANC to pH 4 (mol/kg) | 0.276 | | | | - | - | - | |
| Eluate Analysis | C ₂ Conc ⁿ in 1 | .0:1 eluate (mg/l) | A2 10:1 conc ^r | leached (mg/kg) | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg | | | |
| | Result | Limit of Detection | Result | Limit of Detection | | | | |
| Arsenic | 0.138 | <0.00012 | 1.38 | <0.0012 | 0.5 | 2 | 25 | |
| Barium | 0.203 | <0.00003 | 2.03 | <0.0003 | 20 | 100 | 300 | |
| Cadmium | 0.000145 | <0.0001 | 0.00145 | <0.001 | 0.04 | 1 | 5 | |
| Chromium | 0.0499 | <0.00022 | 0.499 | <0.0022 | 0.5 | 10 | 70 | |
| Copper | <0.00085 | <0.00085 | <0.0085 | <0.0085 | 2 | 50 | 100 | |
| Mercury Dissolved (CVAF) | <0.00001 | <0.00001 | <0.0001 | <0.0001 | 0.01 | 0.2 | 2 | |
| Molybdenum | 0.0983 | <0.00024 | 0.983 | <0.0024 | 0.5 | 10 | 30 | |
| Nickel | <0.00015 | <0.00015 | <0.0015 | <0.0015 | 0.4 | 10 | 40 | |
| Lead | 0.000082 | <0.00002 | 0.00082 | <0.0002 | 0.5 | 10 | 50 | |

0.471

4.8

< 0.0041

1010

10.1

532

4570

<0.16

<30

| Date Prepared | 10-Mar-2016 |
|--------------------------|-------------|
| pH (pH Units) | 9.83 |
| Conductivity (µS/cm) | 599.00 |
| Temperature (°C) | 18.60 |
| Volume Leachant (Litres) | 0.844 |
| | |

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

0.0471

0.48

< 0.00041

101

1.01

53.2

457

<0.016

<3

< 0.00016

< 0.00039

< 0.00041

<2

<0.5

<2

<5

<0.016

<3

Mcerts Certification does not apply to leachates

Antimony

Selenium

Chloride

Fluoride

Sulphate (soluble)

Total Dissolved Solids

Total Monohydric Phenols (W)

Dissolved Organic Carbon

Zinc

CERTIFICATE OF ANALYSIS

Validated

Table of Results - Appendix

| Method No | Reference | Description | Wet/Dry Sample_1 | Surrogate Corrected |
|-----------|--|---|---------------------|------------------------|
| PM024 | Modified BS 1377 | Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material | | |
| PM115 | | Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step | | |
| TM018 | BS 1377: Part 3 1990 | Determination of Loss on Ignition | | |
| TM061 | Method for the Determination of EPH,Massachusetts Dept.of EP, 1998 | Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40) | | |
| TM089 | Modified: US EPA Methods 8020 & 602 | Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12) | | |
| TM090 | Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060 | Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water | | |
| TM104 | Method 4500F, AWWA/APHA, 20th Ed., 1999 | Determination of Fluoride using the Kone Analyser | | |
| TM120 | Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970 | Determination of Electrical Conductivity using a Conductivity Meter | | |
| TM123 | BS 2690: Part 121:1981 | The Determination of Total Dissolved Solids in Water | | |
| TM132 | In - house Method | ELTRA CS800 Operators Guide | | |
| TM133 | BS 1377: Part 3 1990;BS 6068-2.5 | Determination of pH in Soil and Water using the GLpH pH Meter | | |
| TM152 | Method 3125B, AWWA/APHA, 20th Ed., 1999 | Analysis of Aqueous Samples by ICP-MS | | |
| TM168 | EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography | Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils | | |
| TM178 | Modified: US EPA Method 8100 | Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters | | |
| TM182 | CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test | Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils | | |
| TM183 | BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3 | Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry | | |
| TM184 | EPA Methods 325.1 & 325.2, | The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers | | |
| TM213 | In-house Method | Rapid Determination of PAHs by GC-FID | | |
| TM228 | US EPA Method 6010B | Determination of Major Cations in Water by iCap 6500 Duo ICP-OES | | |
| TM256 | The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4. | Determination of pH in Water and Leachate using the GLpH pH Meter | | |
| TM259 | by HPLC | Determination of Phenols in Waters and Leachates by HPLC | | |

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

Validated

| SDG: | 160309-113 | Location: | Valleyfields | Order Number: | 405/8371 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 353745 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Test Completion Dates

| Lab Sample No(s) | 13060782 | 13060783 | 13060787 | 13060785 | 13060784 | 13060790 | 13060788 | 13060793 | 13060794 | 13060795 |
|------------------------------------|---------------|---------------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Customer Sample Ref. | ES1 | ES2 | PFA | SN | TD | VF1 | VF4 | VF5 | VF6 | VF7 |
| AGS Ref. | | | | | | | | | | |
| Depth | | | | | | | | | | |
| Type | SALINE D | SALINE D | SOLID | SALINE D | SALINE C | SALINE D | SALINE C | SALINE C | SALINE C | SALINE C |
| | | O/ LINE_D | 15 Mar 2016 | O/ LINE_D | O/ LINE_O | O/ LINE_D | O, LEINE_O | O/ LEINE_O | O/ LEINE_O | O/LINE_O |
| | 14 Mar 2016 | 11 Mar 2016 | 15-Mar-2016 | 11 Mar 2016 | 14 Mar 2016 | 11 Mar 2016 | 14 Mar 2016 | 11 Mar 2016 | 14 Mar 2016 | 11 Mar 2016 |
| CEN 10:1 Leachate (1 Stage) | 14-10181-2010 | 11-10101-2010 | 10-Mar-2016 | 11-10181-2010 | 14-10181-2010 | 11-10101-2010 | 14-10101-2010 | 11-10101-2010 | 14-10181-2010 | 11-Mai-2010 |
| CEN Readings | | | 11-Mar-2016 | | | | | | | |
| Conductivity (at 20 deg C) | 15-Mar-2016 | 15-Mar-2016 | 11 Mai 2010 | 15-Mar-2016 |
| Dissolved Metals by ICP-MS | 17-Mar-2016 | 17-Mar-2016 | 14-Mar-2016 | 17-Mar-2016 |
| Dissolved Organic/Inorganic Carbon | 11 11101 2010 | 11 11101 2010 | 14-Mar-2016 | 11 11101 2010 | 11 11101 2010 | 11 11101 2010 | 11 11101 2010 | 11 11101 2010 | 11 11101 2010 | 11 11101 2010 |
| Fluoride | | | 14-Mar-2016 | | | | | | | |
| GRO by GC-FID (S) | | | 16-Mar-2016 | | | | | | | |
| Loss on Ignition in soils | | | 16-Mar-2016 | | | | | | | |
| Mercury Dissolved | | | 14-Mar-2016 | | | | | | | |
| Metals by iCap-OES Dissolved (W) | 15-Mar-2016 | 15-Mar-2016 | | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 11-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 |
| Mineral Oil | | | 16-Mar-2016 | | | | | | | |
| PAH Spec MS - Aqueous (W) | 15-Mar-2016 | 14-Mar-2016 | | 15-Mar-2016 | 15-Mar-2016 | 14-Mar-2016 | 14-Mar-2016 | 14-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 |
| PAH Value of soil | | | 14-Mar-2016 | | | | | | | |
| PCBs by GCMS | | | 15-Mar-2016 | | | | | | | |
| pН | | | 11-Mar-2016 | | | | | | | |
| pH Value | 11-Mar-2016 | 11-Mar-2016 | | 11-Mar-2016 |
| Phenols by HPLC (W) | | | 14-Mar-2016 | | | | | | | |
| Sample description | | | 10-Mar-2016 | | | | | | | |
| Total Dissolved Solids | | | 15-Mar-2016 | | | | | | | |
| Total Organic Carbon | | | 14-Mar-2016 | | | | | | | |
| Lab Sample No(s) | 13060796 | 13060789 | 13060797 | 13060798 | 13060799 | 13060792 | | | | |
| Customer Sample Ref. | VF8 | VF9 | VF10 | VF11 | VF12 | VF3D | | | | |
| | | | | | | | | | | |
| AGS Ref. | | | | | | | | | | |
| Depth | | | | | | | | | | |
| eqvT | SALINE D | SALINE D | SALINE C | SALINE B | SALINE B | SALINE B | | | | |
| Anions by Kone (w) | 14-Mar-2016 | 14-Mar-2016 | 11-Mar-2016 | 16-Mar-2016 | 14-Mar-2016 | 14-Mar-2016 | | | | |
| Conductivity (at 20 deg C) | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | | | | |
| Dissolved Metals by ICP-MS | 17-Mar-2016 | 17-Mar-2016 | 17-Mar-2016 | 17-Mar-2016 | 17-Mar-2016 | 17-Mar-2016 | | | | |
| Metals by iCap-OES Dissolved (W) | 15-Mar-2016 | 15-Mar-2016 | 14-Mar-2016 | 11-Mar-2016 | 14-Mar-2016 | 15-Mar-2016 | | | | |
| PAH Spec MS - Aqueous (W) | 14-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 15-Mar-2016 | 14-Mar-2016 | | | | |
| pH Value | 11-Mar-2016 | 11-Mar-2016 | 11-Mar-2016 | 11-Mar-2016 | 11-Mar-2016 | 11-Mar-2016 | | | | |
| b | | | | | | | l I | | | |

CERTIFICATE OF ANALYSIS

| SDG: | 160309-113 | Location: | Valleyfields | Order Number: | 405/8371 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 353745 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Appendix

ALcontrol Laboratories

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 20. For the BSEN 12457-3 two batch process to allow the cumulative release to be for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, and Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol)

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17 Stones/debris are not routinely removed. We always endeavour to take а representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

| 1 | Container with Headspace provided for volatiles analysis |
|---|--|
| 2 | Incorrect container received |
| 3 | Deviation from method |
| 4 | Holding time exceeded before sample received |
| 5 | Samples exceeded holding time before presevation was performed |
| § | Sampled on date not provided |
| • | Sample holding time exceeded in laboratory |
| 0 | Sample holding time exceeded due to sampled on date |
| & | Sample Holding Time exceeded - Late arrival of instructions. |
| | |

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised liaht microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

| Asbestos Type | Common Name |
|----------------------|---------------|
| Chrysofile | WhiteAsbestos |
| Amosite | BrownAsbestos |
| Crodobite | Blue Asbestos |
| Fibraus Adinate | - |
| Florous Anthophylite | - |
| Fibrous Trendile | - |

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



SLR Consulting Ltd Floor 2 4/5 Lochside View Edinburgh Park Edinburgh Lanarkshire EH12 9DH

Attention: Zak Ritchie

CERTIFICATE OF ANALYSIS

Date: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: 24 June 2016 H_SLR_EDH 160608-88 405.00481.00033 Valleyfields 366319

We received 15 samples on Wednesday June 08, 2016 and 15 of these samples were scheduled for analysis which was completed on Friday June 24, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan Operations Manager



Alcontrol Laboratories is a trading division of ALcontrol UK Limited Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

Validated

| - | | | | | |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| SDG: | 160608-88 | Location: | Valleyfields | Order Number: | 405/8478 |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 366319 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Received Sample Overview

| Lab Sample No(s) | Customer Sample Ref. | AGS Ref. | Depth (m) | Sampled Date |
|------------------|----------------------|----------|-----------|--------------|
| 13558086 | ES1 | | | 06/06/2016 |
| 13558087 | ES2 | | | 06/06/2016 |
| 13558271 | PFA | | | 06/06/2016 |
| 13558085 | TD | | | 06/06/2016 |
| 13558079 | VF1 | | | 06/06/2016 |
| 13558090 | VF4 | | | 07/06/2016 |
| 13558080 | VF5 | | | 06/06/2016 |
| 13558081 | VF6 | | | 06/06/2016 |
| 13558083 | VF7 | | | 06/06/2016 |
| 13558091 | VF8 | | | 07/06/2016 |
| 13558084 | VF9 | | | 06/06/2016 |
| 13558092 | VF10 | | | 07/06/2016 |
| 13558093 | VF11 | | | 07/06/2016 |
| 13558094 | VF12 | | | 07/06/2016 |
| 13558088 | VF3D | | | 07/06/2016 |

Only received samples which have had analysis scheduled will be shown on the following pages.

| ALcontrol L | aborator | ies | С | FR | ті | FIG | CΔ | TF | = c |)F | ΔΙ | NZ | 71. | YS | 315 | | | | | | | | | | | | | | [| | Validated |
|---|------------------------------------|----------------------|----------------------------------|-------------------------|--------------------|-----------------------|------------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|---------------------|-----------------------|---------------------|---|---------------------|--------------------|-------------------------|--------------------|-----------------------|--------------------|-----------------------|---------------------|-----------------------|---------------------|--|---------------------|--------------------|-----------------------|-----------|
| SDG: Job: Client Reference: | 160608-88 H_SLR_EI 405.00481 | DH-58 .00033 | Location Custome Attention | r: 1: | Va SL Za | lley R C k R | field Cons itchi | ls sulti ie | ng l | Ltd | | | | | | | | C F S | Drde Rep Gup | er N ort ers | lun Nu ede | nbe mb ed l | er: er: Rep | ort | : | 4(3(| 05/8 663 | 347 19 | 8 | | |
| Saline Water (Sal Results Legend X Test | W) | Lab Sample | e No(s) | | 13558086 | | 13558087 | | 13558085 | | 13558079 | | | 13558000 | | 13558080 | | 13558081 | | 13558083 | | 13558091 | | 13330004 | 100001 | 10000001 | 13558092 | | 13558093 | 13558094 | |
| No Determina Possible | tion | Custon Sample Ref | ner ference | | ES1 | | ES2 | | TD | | VF1 | i | | VEA | | VF5 | | VF6 | | VF7 | | VF8 | | V F 9 | XT0 | | VE10 | | VF11 | VF12 | |
| | | AGS Refe | rence | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Depth (| (m) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Contair | ner | 0.51 glass bottle (ALE2 | HNO3 Filtered (ALE | 0.5I glass bottle (AL | HNO3 Filtered (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE | 0.5I glass bottle (AL | 500ml Plastic (ALE2 | 0.5l glass bottle (AL | 500ml Plastic (ALE2 | U.5I glass bottle (AL HNO3 Filtered (ALE | 500ml Plastic (ALE2 | HNO3 Filtered (ALE | 0 51 glass hottle (ALE2 | HNO3 Filtered (ALE | 0.51 glass bottle (AL | HNO3 Filtered (ALE | 0.5l glass bottle (AL | 500ml Plastic (ALE2 | 0.5I glass bottle (AL | 500ml Plastic (ALE2 | 0.5I glass bottle (AL HNO3 Filtered (AL | 500ml Plastic (ALE2 | HNO3 Filtered (ALE | 0.5I glass bottle (AL | |
| Anions by Kone (w) | | All | NDPs: 0 Tests: 14 | , | <mark>(</mark> | | × | | x | | x | | x | | x | | x | | x | |) | C | | x | | x | | x | | | |
| Conductivity (at 20 deg.C) | | All | NDPs: 0 Tests: 14 | , | C | | x | | x | | x | | x | | x | | x | | x | |) | < | | x | | x | | x | | | |
| Dissolved Metals by ICP-N | IS | All | NDPs: 0 Tests: 14 | | x | | x | | x | | x | <u> </u> | | × | | x | | x | | x | | x | |) | < C | | x | | x | | |
| Metals by iCap-OES Disso | lved (W) | All | NDPs: 0 Tests: 14 | | x | | x | | x | | x | | | x | | x | | x | | x | | x | |) | <mark>(</mark> | | x | | x | | |
| PAH Spec MS - Aqueous (| W) | All | NDPs: 0 Tests: 14 | x | | x | | x | | x | | x | | x | <u> </u> | × | <u> </u> | 2 | x | | x | | x | | x | | x | | | x | |
| pH Value | | All | NDPs: 0 Tests: 14 |) | <pre>c</pre> | | × | | x | | x | | x | | x | | x | | x | |) | < | | x | | x | | x | | | |

| ALcontrol L | _aborator | ies | С | ER [.] | TIFIC | ATE OF ANALY | 'SIS | L | Validat |
|---|------------------------------------|----------------------|-----------------------------------|--------------------|--|------------------------------|---|--------------------|---------|
| SDG: Job: Client Reference: | 160608-88 H_SLR_EI 405.00481 | ; DH-58 .00033 | Location: Custome Attention | : r: i: | Valleyfie SLR Co Zak Rite | elds nsulting Ltd chie | Order Number: Report Number: Superseded Report: | 405/8478 366319 | |
| Saline Water (Sal Results Legend X Test | I W) | Lab Sample | e No(s) | 13558094 | 13558088 | | | | |
| No Determina Possible | ation | Custom Sample Ref | ner erence | VF12 | VF3D | | | | |
| | | AGS Refe | rence | | | | | | |
| | | Depth (| m) | | | | | | |
| | | Contair | ner | 500ml Plastic (ALE | HNO3 Filtered (ALE 500ml Plastic (ALE2 0.5l glass bottle (AL | | | | |
| Anions by Kone (w) | | All | NDPs: 0 Tests: 14 | x | x | | | | |
| Conductivity (at 20 deg.C |) | All | NDPs: 0 Tests: 14 | x | x | | | | |
| Dissolved Metals by ICP-I | MS | All | NDPs: 0 Tests: 14 | × | x | | | | |
| Metals by iCap-OES Diss | olved (W) | All | NDPs: 0 Tests: 14 | x | x | | | | |
| PAH Spec MS - Aqueous | (W) | All | NDPs: 0 Tests: 14 | | x | | | | |
| pH Value | | All | NDPs: 0 Tests: 14 | x | x | | | | |

| SDG: | 160608-88 | Location | i: Va |
|-------------------------------------|---------------------------------|----------------------|----------------------------|
| Job: Client Reference: | H_SLR_EDH-58 405.00481.00033 | Custome Attention | ər: SL n: Za |
| SOLID | | | |
| Results Legend | Lab | Sample No(s) | 135582 |
| X Test | | | 271 |
| No Determina | ation | | |
| Possible | c | Customer | ס |
| | Samp | ole Reference | FA |
| | | | |
| | | | |
| | AG | S Reference | |
| | | | |
| | | Depth (m) | |
| | | | N o |
| | | | 0g VO 50g Ar 1k |
| | C | Container | C (ALE nber Ja g TUB |
| | | | =215) ar (AL |
| ANC at pH4 and ANC at p | DH 6 All | NDPs: 0 Tests: 1 | |
| Anions by Kone (w) | | | X |
| | 7.01 | Tests: 1 | x |
| CEN Readings | All | NDPs: 0 | |
| | | Tests: 1 | x |
| Dissolved Metals by ICP-I | MS All | NDPs: 0 Tests: 1 | |
| | | | x |
| Dissolved Organic/Inorgai Carbon | nic All | NDPs: 0 Tests: 1 | Y |
| Fluoride | All | NDPs: 0 | × |
| | | Tests: 1 | x |
| GRO by GC-FID (S) | All | NDPs: 0 | |
| | | Tests. T | x |
| Loss on Ignition in soils | All | NDPs: 0 Tests: 1 | |
| Mercury Dissolved | All | | X |
| | | Tests: 1 | X |
| Mineral Oil | All | NDPs: 0 | |
| | | Tests: 1 | x |
| PAH Value of soil | All | NDPs: 0 Tests: 1 | |
| DCDa by COMP | | | x |
| -CBS by GCM3 | | NDPs: 0 Tests: 1 | Y |
| рН | All | NDPs: 0 | ^ |
| | | Tests: 1 | x |
| Phenols by HPLC (W) | All | NDPs: 0 | |
| | | Tests. T | x |
| ample description | All | | |

| ALcontrol L | .aboratori | ies | ~ | | | | | Validated |
|-----------------------------------|-------------------------------------|-------------------------|--------------------------------------|--|--|---|--------------------|-----------|
| | | | CE | RTI | FICATE OF ANALYSIS | | | |
| SDG: Job: Client Reference: | 160608-88 H_SLR_ED 405.00481. | 0H-58 00033 | Location: Customer: Attention: | Val SLI Zal | leyfields R Consulting Ltd Ritchie | Order Number: Report Number: Superseded Report: | 405/8478 366319 | |
| SOLID Results Legend | | Lab Sample N | lo(s) | 13558271 | | | | |
| No Determina Possible | ation | Custome Sample Refer | r ence | PFA | | | | |
| | | AGS Refere | nce | | | | | |
| | | Depth (m |) | | | | | |
| | | Containe | r -o | 60g VOC (ALE215) 250g Amber Jar (AL | | | | |
| Total Dissolved Solids | | All | NDPs: 0 Tests: 1 | <mark>k</mark> | | | | |
| Total Organic Carbon | | All | NDPs: 0 Tests: 1 | x | | | | |

| ALcontrol I | _aboratories | | | | | Validated |
|-------------------|-----------------|------------|-----------------------|--------------------|----------|-----------|
| | | CEF | RTIFICATE OF ANALYSIS | | | |
| SDG: | 160608-88 | Location: | Valleyfields | Order Number: | 405/8478 | |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 366319 | |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | | |
| | | | | | | |

Sample Descriptions

| Grain Sizes | | | | | | | | | | | | | |
|-------------|-------|--------|--------------|-----------------|--------|-------|--------------|------|-----------------|-------|----------|-------|---------|
| very fine | <0. | 063mm | fine | 0.063mm - 0.1mm | medium | 0.1mm | n - 2mm | coar | se 2mm - 1 | Omm | very coa | rse | >10mm |
| Lab Sample | No(s) | Custom | er Sample Re | f. Depth (m) | Ca | olour | Descripti | on | Grain size | Inclu | usions | Inclu | sions 2 |
| 1355827 | 1 | | PFA | | (| Grey | Sandy Silt L | oam | 0.063 - 2.00 mm | N | one | N | one |

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

_

CERTIFICATE OF ANALYSIS

| SDG: | 160608-88 | Location: | Valleyfields | Order Number: | 405/8478 |
|-------------------|-----------------|------------|--------------|--------------------|----------|
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | 300319 |

| Results Legend | | Customer Sample R | ES1 | ES2 | PFA | TD | VF1 | VF4 |
|---|-----------------|-------------------|----------------------|-----------------------|-------------|----------------------|-----------------------|----------------------|
| M mCERTS accredited. | | | | | | | | |
| aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. | | Depth (m) | | | | | | |
| tot.unfilt Total / unfiltered sample. | | Sample Type | Saline Water (Sal W) | Saline Water (Sal W) | Soil/Solid | Saline Water (Sal W) | Saline Water (Sal W) | Saline Water (Sal W) |
| ** % recovery of the surrogate standa | rd to | Sample Time | | | | | | |
| check the efficiency of the method. results of individual compounds wi | The thin | Date Received | 08/06/2016 | 08/06/2016 | 08/06/2016 | 08/06/2016 | 08/06/2016 | 08/06/2016 |
| samples aren't corrected for the rec | covery | SDG Ref | 160608-88 | 160608-88 13558087 | 160608-88 | 160608-88 | 160608-88 13558079 | 160608-88 |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | | |
| Component | LOD/Uni | its Method | | | | | | |
| Conductivity @ 20 deg.C | <0.00 | 5 IM120 | 37.7 | 34.4 | | 22 | 17.1 | 24.8 |
| | mS/cm | | # | # | | # | # | # |
| Antimony (diss.filt) | <0.000 | 16 IM152 | <0.0016 | 0.00574 | | 0.000966 | <0.00016 | 0.000236 |
| | ing/i | 10 71450 | 0.0500 | 0.0555 | | 0.0101 | 0.0450 | 0.047 |
| Arsenic (diss.nit) | <0.000 | 12 11/1152 | 0.0582 | 0.0555 | | 0.0184 | 0.0156 | 0.017 |
| Deren (dies filt) | -0.000 | M TM150 | 2.02 | # | | # | # | |
| Boron (diss.nit) | <0.008 | 1111132 | 3.02 # | 5.21 # | | 4.42 # | 0.301 # | 5.77 # |
| Cadmium (diss filt) | | 1 TM152 | 0.0108 | 0.00051 | | 0.00255 | # 0.00101 | # 0.00144 |
| Cadmium (diss.mt) | -0.000 ma/l | 1 111132 | 0.0100 # | 0.00951 | | 0.00233 | 0.00101 | 0.00144 # |
| Chromium (diss filt) | <0.000 | 22 TM152 | 0.00656 | 0.00627 | | 0.00131 | 0.00177 | 0.00352 |
| | ma/l | | # | # | | # | # | # |
| Manganese (diss.filt) | <0.000 | 04 TM152 | 0.00155 | 0.017 | | 0.11 | 0.181 | 0.0841 |
| ······· | mg/l | | # | # | | # | # | |
| Molvbdenum (diss.filt) | < 0.000 | 24 TM152 | < 0.0024 | 0.00501 | | 0.665 | 0.00109 | 0.233 |
| | mg/l | | # | # | | # | # | # |
| Selenium (diss.filt) | <0.000 | 39 TM152 | 0.191 | 0.178 | | 0.0503 | 0.0534 | 0.0567 |
| , , , , , , , , , , , , , , , , , , , | mg/l | | # | # | | # | # | # |
| Vanadium (diss.filt) | <0.000 | 24 TM152 | <0.0024 | <0.0024 | | 0.0523 | <0.00024 | <0.00024 |
| | mg/l | | # | # | | # | # | # |
| Sulphate | <2 mg | g/l TM184 | 2400 | 2190 | | 1530 | 830 | 1520 |
| - | - | | # | # | | # | # | # |
| Chloride | <2 mg | g/l TM184 | 17900 | 16700 | | 10900 | 10800 | 10800 |
| | - | | # | # | | # | # | # |
| Sodium (diss.filt) | <0.07 | 6 TM228 | 7930 | 8790 | | 6740 | 5100 | 5470 |
| | mg/l | | # | # | | # | # | # |
| Magnesium (diss.filt) | <0.03 | 6 TM228 | 965 | 1070 | | 225 | 562 | 556 |
| | mg/l | | # | # | | # | # | # |
| рН | <1 p⊦ | H TM256 | 7.8 | 7.89 | | 8.23 | 7.44 | 7.68 |
| | Units | | # | # | | # | # | # |
| Moisture Content Ratio (% | % | PM024 | | | 110 | | | |
| of as received sample) | | | | | | | | |
| Loss on ignition | <0.7 % | % TM018 | | | 17.6 | | | |
| | | | | | M | | | |
| Mineral oil >C10-C40 | <1 mg/ | /kg TM061 | | | 17.4 | | | |
| | | | | | | | | |
| Mineral Oil Surrogate % | % | TM061 | | | 95.2 | | | |
| recovery** | | | | | | | | |
| Organic Carbon, Total | <0.2 % | % TM132 | | | 6.76 | | | |
| | | | | | M | | | |
| рН | 1 pH | TM133 | | | 9.16 | | | |
| | Units | | | | M | | | |
| PCB congener 28 | <0.00 | 3 IM168 | | | <0.003 | | | |
| DCD congester 50 | під/кд | | | | M | | | |
| PGB congener 52 | <0.000 | S 11V1168 | | | <0.003 | | | |
| PCB congener 101 | -0.00 | 3 TN/160 | | | | | | |
| FCB congenier 101 | ~0.00. ma/ka | | | | <0.003 M | | | |
| PCB congener 118 | | 3 TM169 | | | | | | |
| T OB congenier 110 | ~0.000 ma/ka | 1 | | | чо.000 М | | | |
| PCB congener 138 | <0.00 | , 3 TM168 | | | <0.003 | | | |
| T OB congenier 100 | ma/ka | 1 | | | 40.000 M | | | |
| PCB congener 153 | <0.00 | , 3 TM168 | | | <0.003 | | | |
| | ma/ka | 1 | | | M | | | |
| PCB congener 180 | <0.00 | 3 TM168 | | | < 0.003 | | | |
| | mg/ka | 1 | | | M | | | |
| Sum of detected PCB 7 | < 0.02 | 1 TM168 | | | <0.021 | | | |
| Congeners | mg/kg | , | | | | | | |
| ANC @ pH 4 | < 0.03 | 3 TM182 | | | 0.269 | | | |
| | mol/kc | 3 | | | | | | |
| ANC @ pH 6 | < 0.03 | 3 TM182 | | | 0.129 | | | |
| | mol/kg | 3 | | | | | | |
| Polyaromatic | <10 | TM213 | | | <10 | | | |
| hydrocarbons, Total 17 | mg/kg | 1 | | | | | | |

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CERTIFICATE OF ANALYSIS

| SDG: | 160608-88 | Location: | Valleyfields | Order Number: | 405/8478 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 366319 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

| Results Legend | | Customer Sample R | VF5 | VF6 | VF7 | VF8 | VF9 | VF10 |
|---|----------------|------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| # ISO17025 accredited. M mCERTS accredited. | | | | | | | | |
| aq Aqueous / settled sample. | | Depth (m) | | | | | | |
| tot.unfilt Total / unfiltered sample. | | Sample Type | Saline Water (Sal W) |
| * Subcontracted test. ** % recovery of the surrogate standa | rd to | Date Sampled Sample Time | 06/06/2016 | 06/06/2016 | 06/06/2016 | 07/06/2016 | 06/06/2016 | 07/06/2016 |
| check the efficiency of the method. | The | Date Received | 08/06/2016 | 08/06/2016 | 08/06/2016 | 08/06/2016 | 08/06/2016 | 08/06/2016 |
| samples aren't corrected for the rec | covery | SDG Ref | 160608-88 13558080 | 160608-88 13558081 | 160608-88 13558083 | 160608-88 13558091 | 160608-88 13558084 | 160608-88 13558092 |
| (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix) | | Lab Sample No.(s) AGS Reference | 1000000 | 1000001 | 1000000 | 10000001 | 10000004 | 10000052 |
| Component | LOD/Un | its Method | | | | | | |
| Conductivity @ 20 deg.C | <0.00 | 5 TM120 | 20.1 | 15.4 | 14.4 | 25.8 | 23.1 | 15.6 |
| | mS/cn | n | # | # | # | # | # | # |
| Antimony (diss.filt) | <0.000 | 16 TM152 | <0.00016 | 0.000213 | <0.00016 | <0.00016 | <0.0016 | 0.00019 |
| | mg/i | | 0.0470 | 0.0400 | 0.0000 | 0.0404 | 0.0505 | 0.000 |
| Arsenic (diss.filt) | <0.000 | 12 IM152 | 0.0178 | 0.0428 | 0.0203 | 0.0104 | 0.0505 | 0.022 |
| Deren (dies filt) | -0.000 | A TM152 | # 1.70 | # | # | # | # | # |
| Boron (diss.nit) | <0.00s | 94 1101152 | 1.79 | 5.07 # | 0.323 | 3.02 # | 1.23 | 10.1 |
| Cadmium (diss filt) | | 1 TM152 | # 0.00121 | 0.00302 | 0.0013 | # 0.001/11 | 0.00493 | 0.0017 |
| | -0.000 ma/l | 1 111132 | 0.00121 # | 0.00002 | 0.0013 | 0.00141 # | 0.00433 | 0.0017 # |
| Chromium (diss filt) | <0.000 | 22 TM152 | 0 00193 | 0.0011 | 0 00144 | 0 00347 | 0 00674 | 0 00337 |
| | ma/l | | # | # | # | # | # | # |
| Manganese (diss.filt) | <0.000 | 04 TM152 | 0.0368 | 0.0425 | 0.305 | 0.0745 | 0.642 | 0.247 |
| | mg/l | | # | # | # | | | |
| Molybdenum (diss.filt) | < 0.000 | 24 TM152 | 0.00202 | 0.466 | 0.0108 | 0.295 | 0.0444 | 0.264 |
| | mg/l | | # | # | # | # | # | # |
| Selenium (diss.filt) | < 0.000 | 39 TM152 | 0.0617 | 0.0677 | 0.0673 | 0.037 | 0.157 | 0.0705 |
| | mg/l | | # | # | # | # | # | # |
| Vanadium (diss.filt) | <0.000 | 24 TM152 | 0.0031 | 0.0254 | <0.00024 | 0.000498 | <0.0024 | <0.00024 |
| | mg/l | | # | # | # | # | # | # |
| Sulphate | <2 mg | g/l TM184 | 352 | 770 | 494 | 1550 | 771 | 569 |
| | | | # | # | # | # | # | # |
| Chloride | <2 mg | g/l TM184 | 10300 | 7160 | 9430 | 12300 | 11900 | 6340 |
| | | | # | # | # | # | # | # |
| Sodium (diss.filt) | <0.07 | 6 TM228 | 4990 | 3310 | 3580 | 5540 | 5030 | 3670 |
| | mg/l | | # | # | # | # | # | # |
| Magnesium (diss.filt) | <0.03 | 6 TM228 | 453 | 40.9 | 497 | 583 | 578 | 236 |
| | mg/l | | # | # | # | # | # | # |
| рН | <1 p⊦ | H TM256 | 7.51 | 8.02 | 7.19 | 7.78 | 7.32 | 7.76 |
| | Units | | # | # | # | # | # | # |
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CERTIFICATE OF ANALYSIS

| Results Legend # ISO17025 accredited. | | Customer Sample R | VF11 | VF12 | VF3D | | |
|---|-----------------|------------------------------|----------------------|----------------------|----------------------|--|--|
| M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. | | Depth (m) Sample Type | Saline Water (Sal W) | Saline Water (Sal W) | Saline Water (Sal W) | | |
| * Subcontracted test. ** % recovery of the surrogate standa | ard to | Date Sampled Sample Time | 07/06/2016 | 07/06/2016 | 07/06/2016 | | |
| check the efficiency of the method results of individual compounds w | . The rithin | Date Received | 08/06/2016 | 08/06/2016 | 08/06/2016 | | |
| samples aren't corrected for the re (F) Trigger breach confirmed | covery | SDG Ref Lab Sample No.(s) | 13558093 | 13558094 | 13558088 | | |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | |
| Conductivity @ 20 deg.C | <0.00 mS/c | 05 TM120 m | 1.89 # | 1.17 # | 3.66 # | | |
| Antimony (diss.filt) | <0.000 mg/ | 016 TM152 I | <0.00016 | <0.00016 | <0.00016 | | |
| Arsenic (diss.filt) | <0.000 mg/ | 012 TM152 I | 0.00276 # | 0.002 # | 0.00964 # | | |
| Boron (diss.filt) | <0.00 mg/ | 94 TM152 I | 0.301 # | 0.345 # | 0.472 # | | |
| Cadmium (diss.filt) | <0.00 mg/ | 01 TM152 | 0.000124 # | 0.000174 # | 0.000561 # | | |
| Chromium (diss.filt) | <0.000 mg/ | 022 TM152 I | 0.00131 # | 0.000301 # | 0.00119 # | | |
| Manganese (diss.filt) | <0.000 mg/ | 004 TM152 I | 0.0636 | 0.0548 # | 0.124 | | |
| Molybdenum (diss.filt) | <0.000 mg/ | 024 TM152 I | <0.00024 # | <0.00024 # | 0.00048 # | | |
| Selenium (diss.filt) | <0.000 mg/ | 039 TM152 I | 0.00909 # | 0.00595 # | 0.0306 # | | |
| Vanadium (diss.filt) | <0.000 mg/ | 024 TM152 I | 0.000492 # | <0.00024 # | 0.000871 # | | |
| Sulphate | <2 m | ng/l TM184 | <2 # | <2 # | <2 # | | |
| Chloride | <2 m | ng/l TM184 | 395 # | 251 # | 1330 # | | |
| Sodium (diss.filt) | <0.0 mg/ | 76 TM228 I | 263 # | 143 # | 516 # | | |
| Magnesium (diss.filt) | <0.03 mg/ | 36 TM228 I | 26.8 # | 19.6 # | 61.8 # | | |
| рН | <1 p Unit | H TM256 s | 7.79 # | 7.83 # | 7.86 | | |
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ALcontrol Laboratories Validated **CERTIFICATE OF ANALYSIS** 160608-88 Location: Valleyfields 405/8478 SDG: Order Number: Job: H_SLR_EDH-58 Customer: SLR Consulting Ltd Report Number: 366319 405.00481.00033 Attention: Zak Ritchie Superseded Report: **Client Reference:** GRO by GC-FID (S) Customer Sample R PFA Results Le ISO17025 accredited mCERTS accredited. # M Aqueous / settled sample. Dissolved / filtered sample aq Depth (m) diss.filt diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. * % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-5&F& Smple deviation (see appendix) Soil/Solid Sample Type Date Sampled 06/06/2016 Sample Time Date Received 08/06/2016 160608-88 SDG Ref 13558271 Lab Sample No.(s) AGS Reference Component LOD/Units Method Methyl tertiary butyl ether < 0.005 TM089 < 0.005 (MTBE) mg/kg # Benzene <0.01 TM089 <0.01 Μ mg/kg Toluene < 0.002 TM089 <0.002 mg/kg Μ Ethylbenzene < 0.003 TM089 < 0.003 mg/kg Μ < 0.006 TM089 <0.006 m,p-Xylene mg/kg Μ TM089 < 0.003 o-Xylene < 0.003 mg/kg Μ TM089 sum of detected mpo < 0.009 <0.009 xylene by GC mg/kg sum of detected BTEX by < 0.024 TM089 < 0.024 GC mg/kg

| | | | GERI | IFICATE OF A | ANALY 515 | | | |
|---|--|---|--|--|--|---|--|-------------------------------------|
| SDG: Job: Client Reference: | 160608-88 H_SLR_EDH- 405.00481.000 | 58)33 | Location: V Customer: S Attention: Z | alleyfields LR Consulting Ltd ak Ritchie | | Order Number: Report Number Superseded Re | 405/8478 : 366319 port: | |
| AH Spec MS - Aqu | eous (W) | | | | | | | |
| Results Legend # ISO17025 accredited. M mCERTS accredited. | | Customer Sample R | ES1 | ES2 | TD | VF1 | VF4 | VF5 |
| aq Aqueous / settled sample. liss.filt Dissolved / filtered sample. totunfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surroga | e standard to | Depth (m) Sample Type Date Sampled Sample Time | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 07/06/2016 | Saline Water (Sal W) 06/06/2016 |
| check the efficiency of the results of individual comp samples aren't corrected f (F) Trigger breach confirmed | method. The ounds within or the recovery | Date Received SDG Ref Lab Sample No.(s) | 08/06/2016 160608-88 13558086 | 08/06/2016 160608-88 13558087 | 08/06/2016 160608-88 13558085 | 08/06/2016 160608-88 13558079 | 08/06/2016 160608-88 13558090 | 08/06/2016 160608-88 13558080 |
| omponent | LOD/U | nits Method | | | | | | |
| laphthalene (aq) | <0.00 mg/ | 01 TM178 | <0.0001 | <0.0001 | <0.0001 # | <0.0001 # | <0.0001 # | <0.0001 |
| cenaphthene (aq) | <0.0000 | TM178 015 | <0.000015 # | <0.000015 | <0.000015 # | <0.000015 # | <0.000015 # | <0.000015 |
| cenaphthylene (aq) | <0.000 | TM178 011 | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 |
| luoranthene (aq) | <0.0000 | TM178 | <0.000017 # | <0.000017 | <0.000017 # | <0.000017 # | <0.000017 # | 0.000022 |
| Anthracene (aq) | <0.0000 | TM178 015 | <0.000015 # | <0.000015 | <0.000015 # | <0.000015 # | <0.000015 # | <0.000015 |
| Phenanthrene (aq) | <0.000 | TM178 | <0.000022 # | <0.000022 | <0.000022 # | <0.000022 # | <0.000022 # | <0.000022 |
| Fluorene (aq) | <0.000 | TM178 | | <0.000014 | | | | <0.000014 |
| Chrysene (aq) | <0.000 | TM178 | ************************************** | <0.000013 # | * <0.000013 # | * <0.000013 # | * <0.000013 # | 0.000013 |
| Pyrene (aq) | | TM178 | # <0.000015 # | <0.000015 # | # <0.000015 # | // *********************************** | // *********************************** | 0.000023 |
| Benzo(a)anthracene (aq |) | TM178 | # <0.000017 | <0.000017 | # <0.000017 | # <0.000017 | # <0.000017 | 0.000017 |
| enzo(b)fluoranthene (a | q) | TM178 | # <0.000023 | <pre>#</pre> | # <0.000023 | # <0.000023 | # <0.000023 | <0.000023 |
| Benzo(k)fluoranthene (a | q) <0.000(| TM178 | # <0.000027 # | <0.000027 # | // *********************************** | // *********************************** | // *********************************** | <0.000027 |
| Benzo(a)pyrene (aq) | <0.000 | TM178 | ************************************** | <0.00009 # | * <0.00009 # | ** <0.000009 # | * <0.00009 # | 0.000014 |
| Dibenzo(a,h)anthracene | <0.000 | TM178 | | <0.000016 | | | | <0.000016 |
| Benzo(g,h,i)perylene (aq |) <0 000 | TM178 | <0.000016 # | <0.000016 | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 |
| ndeno(1,2,3-cd)pyrene aq) | <0.0000 | TM178 | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 |
| PAH, Total Detected | <0.000 | TM178 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 |
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| | Joratories | 5 | CERT | IFICATE OF A | ANALYSIS | | | validated |
|--|---|--|---|--|-------------------------------------|---|-------------------------------------|-------------------------------------|
| SDG:1Job:HClient Reference:4 | 60608-88 I_SLR_EDH- 05.00481.00 | 58 033 | Location: Va Customer: SI Attention: Za | alleyfields LR Consulting Ltd ak Ritchie | | Order Number: Report Number Superseded Re | 405/8478 : 366319 port: | |
| AH Spec MS - Aque | ous (W) | | | | | | | |
| Results Legend # ISO17025 accredited. | | Customer Sample R | VF6 | VF7 | VF8 | VF9 | VF10 | VF11 |
| m ///CERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted test. * % recovery of the surrogate | standard to | Depth (m) Sample Type Date Sampled Sample Time | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 07/06/2016 | Saline Water (Sal W) 06/06/2016 | Saline Water (Sal W) 07/06/2016 | Saline Water (Sal W 07/06/2016 |
| check the efficiency of the m results of individual compou samples aren't corrected for (F) Trigger breach confirmed -5&+§@ Sample deviation (see apper | nethod. The unds within the recovery ndix) | Date Received SDG Ref Lab Sample No.(s) AGS Reference | 08/06/2016 160608-88 13558081 | 08/06/2016 160608-88 13558083 | 08/06/2016 160608-88 13558091 | 08/06/2016 160608-88 13558084 | 08/06/2016 160608-88 13558092 | 08/06/2016 160608-88 13558093 |
| Naphthalene (aq) | <0.00 | 001 TM178 | <0.0001 | <0.0001 | <0.0001 # | <0.0001 | <0.0001 | <0.0001 |
| Acenaphthene (aq) | <0.000 | TM178 | <0.000015 | <0.000015 | <0.000015 | <0.000015 | <0.000015 # | <0.000015 |
| Acenaphthylene (aq) | <0.000 | TM178 | <0.000011 # | <0.000011 # | <0.000011 # | <0.000011 | <0.000011 # | <0.000011 |
| Fluoranthene (aq) | <0.000 | TM178 | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 |
| Anthracene (aq) | <0.000 | TM178 | | <0.000015 # | | | | <0.000015 |
| Phenanthrene (aq) | <0.000 | TM178 | <0.000022 # | <0.000022 # | <0.000022 # | | * <0.000022 # | <0.000022 |
| Fluorene (aq) | <0 000 | TM178 | | | | | | <0.000014 |
| Chrysene (aq) | <0 000 | TM178 | <0.000013 # | <0.000013 # | <0.000013 # | | | <0.000013 |
| ^o yrene (aq) | <0.000 | TM178 | <0.000015 # | <0.000015 # | <0.000015 # | <0.000015 # | 0.000015 # | <0.000015 |
| Benzo(a)anthracene (aq) | <0.000 | TM178 | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 |
| Benzo(b)fluoranthene (aq |) <0.000 | TM178 | <0.000023 # | <0.000023 # | <0.000023 # | <0.000023 # | <0.000023 # | <0.000023 |
| Benzo(k)fluoranthene (aq |) <0.000 | TM178 | <0.000027 # | <0.000027 # | <0.000027 # | <0.000027 # | <0.000027 # | <0.000027 |
| Benzo(a)pyrene (aq) | <0.000 | TM178 | <0.00009 | <0.00009 | <0.000009 | <0.00009 | <0.00009 | <0.00009 |
| Dibenzo(a,h)anthracene aq) | <0.000 | TM178 016 | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 |
| Benzo(g,h,i)perylene (aq) | <0.000 | TM178 016 | <0.000016 # | <0.000016 # | <0.000016 # | <0.000016 | <0.000016 # | <0.000016 |
| ndeno(1,2,3-cd)pyrene aq) | <0.000 | TM178 | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 # | <0.000014 |
| PAH, Total Detected USEPA 16 (aq) | <0.000 | TM178 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 |
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CERTIFICATE OF ANALYSIS

| SDG: 1606 Job: H_SI | 08-88 _R_EDH- | 58 | Location: Va Customer: SI | alleyfields _R Consulting Ltd | Order Number: Report Number: | 405/8478 366319 | |
|---|------------------|-------------------|------------------------------|----------------------------------|---------------------------------|--------------------|--|
| Client Reference: 405.0 | 0481.00 | 033 | Attention: Za | ak Ritchie | Superseded Rep | oort: | |
| PAH Spec MS - Aqueou | s (W) | Customor Sample P | 1/510 | VE2D | | | |
| # ISO17025 accredited. | | Customer Sample R | VF12 | VF3D | | | |
| aq Aqueous / settled sample. | | Depth (m) | | | | | |
| tot.unfilt Total / unfiltered sample. | | Sample Type | Saline Water (Sal W) | Saline Water (Sal W) | | | |
| ** % recovery of the surrogate stand | ard to | Sample Time | | | | | |
| check the efficiency of the method results of individual compounds v | l. The vithin | Date Received | 08/06/2016 | 08/06/2016 | | | |
| samples aren't corrected for the re (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 13558094 | 13558088 | | | |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | • | | | | |
| Naphthalene (aq) | < 0.00 | 01 TM178 | <0.0001 | <0.0001 | | | |
| | mg/ | 1 | # | # | | | |
| Acenaphthene (aq) | <0.000 | TM178 015 | <0.000015 # | <0.000015 # | | | |
| Acenaphthylene (aq) | | TM178 | <0.000011 | <0.000011 | | | |
| Elucrophone (cg) | <0.000 | 011 | # | # | | | |
| Fluorantinene (aq) | <0.000 | 017 | <0.000017 | <0.000017 # | | | |
| Anthracene (aq) | <0.000 | TM178 | <0.000015 | <0.000015 | | | |
| Phenanthrene (ag) | -0.000 | TM178 | <0.000022 | 0 000046 | | | |
| | <0.000 | 022 | # | # | | | |
| Fluorene (aq) | <0.000 | TM178 014 | <0.000014 # | 0.000017 | | | |
| Chrysene (aq) | | TM178 | <0.000013 | <0.000013 | | | |
| Pyrene (ag) | <0.000 | 013 TM178 | # 0.000025 | # 0.000019 | | | |
| 5 (0 | <0.000 | 015 | # | # | | | |
| Benzo(a)anthracene (aq) | <0.000 | TM178 | <0.000017 | <0.000017 | | | |
| Benzo(b)fluoranthene (aq) | < 0.000 | TM178 | <0.000023 | <0.000023 # | | | |
| Benzo(k)fluoranthene (aq) | <0.000 | TM178 027 | <0.000027 # | <0.000027 # | | | |
| Benzo(a)pyrene (aq) | | TM178 | <0.00009 | <0.00009 | | | |
| | <0.000 | 009 | # | # | | | |
| (aq) | <0.000 | 016 | <0.000016 | <0.000016 | | | |
| Benzo(g,h,i)perylene (aq) | <0.000 | TM178 016 | <0.000016 # | <0.000016 # | | | |
| Indeno(1,2,3-cd)pyrene (aq) | <0.000 | TM178 014 | <0.000014 # | <0.000014 # | | | |
| PAH, Total Detected | <0.000 | TM178 | <0.000344 | <0.000344 | | | |
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CERTIFICATE OF ANALYSIS

Validated

| | | | | | | 1313 | | | |
|--|--|-------------------------|----------------------------------|----------------------------------|----------------------------|-------------------------------|--|---|-----------------------|
| SDG: 160 Job: H_ Client Reference: 405 |)608-88 SLR_EDH-58 5.00481.00033 | Lo Ci At | ocation: ustomer: tention: | Valleyfie SLR Cor Zak Ritc | lds nsulting Ltd hie | O Ri Si | rder Number: eport Number: uperseded Report: | 405/8478 366319 | |
| | | CEN | 10:1 \$ | SINGLE | STAGE LEAC | CHATE TES | Г | | |
| WAC ANALYTICAL | | 6 | | | | | | REF : BS | EN 12457 |
| Client Reference | | | | | Site Location | | Vallev | fields | |
| Mass Sample taken (k | a) | 0 129 | | | Natural Moistur | e Content (%) | 43.6 | | |
| Mass of dry sample (k | 9) (9) | 0.125 | | | Dry Matter Cont | e content ($\frac{1}{2}$) | 40.0 | | |
| Particle Size <4mm | 9) | >95% | | | Dry Matter Com | ent (%) | 09.7 | | |
| | | | | | | | | | |
| Case | | | | | | | Landf | ill Waste Acce | otance |
| SDG | | 160608-88 | | | | | | Criteria Limits | |
| Lab Sample Number(s | i) | 13558271 | | | | | | 1 | |
| Sampled Date | | 06-Jun-2016 | | | | | | Stable | |
| Customer Sample Ref | | PFA | | | | | Inert Waste | Non-reactive Hazardous Waste | Hazardous |
| Depth (m) | - | | | | | | Landfill | in Non- Hazardous | Waste Landfil |
| Solid Waste Analysis | | Result | | | | | | Landfill | |
| | | 6.76 | | | | | 3 | 5 | 6 |
| Loss on Ignition (%) | | 17.6 | | | | | - | - | 10 |
| Sum of BTEX (mg/kg) | | <0.024 | | | | | 6 | - | - |
| Sum of 7 PCBs (mg/kg) | | <0.021 | | | | | 1 | - | - |
| Mineral Oil (mg/kg) | | 17.4 | | | | | 500 | - | - |
| PAH Sum of 17 (mg/kg) | | <10 | | | | | 100 | - | - |
| PH (pH Units) ANC to pH 6 (mol/kg) | | 9.16 | | | | | - | - | - |
| ANC to pH 4 (mol/kg) | | 0.269 | | | | | - | - | - |
| | l I | | | | | | | | |
| Eluate Analysis | | C2 Conc ⁿ in | 10:1 eluat | e (mg/l) | A2 10:1 conc | ⁿ leached (mg/kg) | Limit valu using B | es for compliance lea IS EN 12457-3 at L/S | ching test 10 l/kg |
| America | | Result | Limit | of Detection | Result | Limit of Detectio | n or | 0 | 05 |
| Arsenic | | 0.042 | <0 | .00012 | 0.42 | <0.0012 | 0.5 | 2 | 25 |
| Barium | | 0.332 | <0 | .00003 | 3.32 | < 0.0003 | 20 | 100 | 300 |
| Cadmium | | 0.00531 | <(| 00000 | 0.0531 | <0.001 | 0.04 | 10 | 0 70 |
| Chromium | | 0.0548 | <0 | .00022 | 0.0444 | <0.0022 | 0.5 | 10 | 100 |
| Copper | | 0.00141 | <0 | .00085 | 0.0141 | <0.0085 | 2 | 50 | 100 |
| Melukalaruwa | | <0.00001 | <0 | .00001 | <0.0001 | <0.0001 | 0.01 | 0.2 | 2 |
| Niekol | | 0.0104 | <0 | .00024 | 3.10 | <0.0024 | 0.5 | 10 | 30 |
| | | 0.00494 | <0 | .00015 | 0.0494 | <0.0015 | 0.4 | 10 | 40 |
| Lead | | 0.000737 | <0 | .00002 | 0.00737 | <0.0002 | 0.5 | 10 | 50 |
| Solonium | | 0.0202 | <0 | .00016 | 0.202 | <0.0010 | 0.06 | 0.7 | 5 7 |
| Zino | | 0.230 | <0 | .00039 | 2.30 | <0.0039 | 0.1 | <u> </u> | 200 |
| Chlorido | | 0.00207 | <0 | <100 | 0.0207 | <0.0041 | 4 | 15000 | 200 |
| Eluorido | | 2910 | | < 100 | 29100 | <1000 | 10 | 15000 | 2000 |
| Sulphate (soluble) | | 624 | | <10 | 5240 | <100 | 1000 | 20000 | 5000 |
| Total Dissolved Solids | | 7420 | | < 25 | 74200 | <100 | 1000 | 60000 | 10000 |
| Total Monohydric Phenols (M | 0 | <0.016 | | ~23 | <0.16 | <2.50 | 4000 | 00000 | 100000 |
| Dissolved Organic Carbon | ,, | <0.010 | | ~2 | <0.10 | <0.10 | F00 | | - |
| | | | | | | | | | |
| Leach Test Informatio | n | | | | | | | | |
| Date Prepared | | 09-Jun-2016 | | | | | | | |
| pH (pH Units) | | 9.23 | | | | | | | |
| Conductivity (µS/cm) | | 8,780.00 | | | | | | | |
| Volume Leachant (Litron) | | 21.00 | | | | | | | |
| Comme Leachant (LILES) | | 0.861 | | | | | | | |

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

24/06/2016 13:42:41

CERTIFICATE OF ANALYSIS

Validated

Table of Results - Appendix

| Method No | Reference | Description | Wet/Dry Sample_1 | Surrogate Corrected |
|-----------|--|---|---------------------|------------------------|
| PM024 | Modified BS 1377 | Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material | | |
| PM115 | | Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step | | |
| TM018 | BS 1377: Part 3 1990 | Determination of Loss on Ignition | | |
| TM061 | Method for the Determination of EPH,Massachusetts Dept.of EP, 1998 | Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40) | | |
| TM089 | Modified: US EPA Methods 8020 & 602 | Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12) | | |
| TM090 | Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060 | Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water | | |
| TM104 | Method 4500F, AWWA/APHA, 20th Ed., 1999 | Determination of Fluoride using the Kone Analyser | | |
| TM120 | Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970 | Determination of Electrical Conductivity using a Conductivity Meter | | |
| TM123 | BS 2690: Part 121:1981 | The Determination of Total Dissolved Solids in Water | | |
| TM132 | In - house Method | ELTRA CS800 Operators Guide | | |
| TM133 | BS 1377: Part 3 1990;BS 6068-2.5 | Determination of pH in Soil and Water using the GLpH pH Meter | | |
| TM152 | Method 3125B, AWWA/APHA, 20th Ed., 1999 | Analysis of Aqueous Samples by ICP-MS | | |
| TM168 | EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography | Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils | | |
| TM178 | Modified: US EPA Method 8100 | Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters | | |
| TM182 | CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test | Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils | | |
| TM183 | BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3 | Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry | | |
| TM184 | EPA Methods 325.1 & 325.2, | The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers | | |
| TM213 | In-house Method | Rapid Determination of PAHs by GC-FID | | |
| TM228 | US EPA Method 6010B | Determination of Major Cations in Water by iCap 6500 Duo ICP-OES | | |
| TM256 | The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4. | Determination of pH in Water and Leachate using the GLpH pH Meter | | |
| TM259 | by HPLC | Determination of Phenols in Waters and Leachates by HPLC | | |

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

Validated

| SDG: | 160608-88 | Location: | Valleyfields | Order Number: | 405/8478 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 366319 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Test Completion Dates

| Lab Sample No(s) | 13558086 | 13558087 | 13558271 | 13558085 | 13558079 | 13558090 | 13558080 | 13558081 | 13558083 | 13558091 |
|-----------------------------------|---------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Customer Sample Ref. | ES1 | ES2 | PFA | TD | VF1 | VF4 | VF5 | VF6 | VF7 | VF8 |
| AGS Ref. | | | | | | | | | | |
| Depth | | | | | | | | | | |
| Type | SALINE D | SALINE D | SOLID | SALINE C | SALINE C | SALINE C | SALINE C | SALINE C | SALINE C | SALINE C |
| | OALINE_D | OALINE_D | | OALINE_O | OALINE_O | OALINE_O | OALINE_C | OALINE_O | OALINE_O | OALINE_O |
| ANC at pH4 and ANC at pH 6 | 16 km 2016 | 12 Jun 2016 | 10-Jun-2016 | 12 km 2016 | 10 Jun 2016 | 12 Jun 2016 | 12 Jun 2016 | 12 km 2016 | 12 Jun 2016 | 16 Jun 2016 |
| CEN 10:1 Leachate (1 Stage) | 10-Jun-2010 | 13-Juli-2016 | 13-Jun-2016 | 13-Juli-2016 | 10-Jun-2016 | 13-Juli-2016 | 13-Juli-2016 | 13-Jun-2016 | 13-Juli-2016 | 10-Jun-2016 |
| CEN Peadings | | | 10 Jun 2016 | | | | | | | |
| Conductivity (at 20 deg C) | 13- Jun-2016 | 13- lun-2016 | 10-3011-2010 | 13- lun-2016 | 13- lun-2016 | 13- lun-2016 | 13- Jun-2016 | 13- lun-2016 | 13- lun-2016 | 13- lun-2016 |
| Dissolved Metals by ICP-MS | 20- Jun-2016 | 20- Jun-2016 | 13- lun-2016 | 20- Jun-2016 | 20- Jun-2016 | 24- Jun-2016 | 20- Jun-2016 | 20- Jun-2016 | 20- Jun-2016 | 24- lun-2016 |
| Dissolved Metals by ICI - MS | 20-301-2010 | 20-3011-2010 | 13 Jun 2016 | 20-301-2010 | 20-301-2010 | 24-3011-2010 | 20-3011-2010 | 20-301-2010 | 20-301-2010 | 24-3011-2010 |
| Eluoride | | | 13-Jun-2016 | | | | | | | |
| | | | 16 Jun 2016 | | | | | | | |
| Loss on Ignition in soils | | | 13- Jun-2016 | | | | | | | |
| | | | 13-Jun-2016 | | | | | | | |
| Metals by iCap_OES Dissolved (W/) | 15-Jun-2016 | 15-Jun-2016 | 10 0011 2010 | 15-Jun-2016 | 15-Jun-2016 | 16-Jun-2016 | 15-Jun-2016 | 15-Jun-2016 | 15-Jun-2016 | 16-Jun-2016 |
| Mineral Oil | 10 0011 2010 | 10 0011 2010 | 15-Jun-2016 | 10 0011 2010 | 10 0011 2010 | 10 0011 2010 | 10 0011 2010 | | 10 0011 2010 | 10 0011 2010 |
| PAH Spec MS - Aqueous (W) | 16-Jun-2016 | 16-Jun-2016 | | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 |
| PAH Value of soil | | | 10-Jun-2016 | | | | | | | |
| PCBs by GCMS | | | 13-Jun-2016 | | | | | | | |
| рН | | | 10-Jun-2016 | | | | | | | |
| pH Value | 13-Jun-2016 | 14-Jun-2016 | | 10-Jun-2016 | 14-Jun-2016 | 13-Jun-2016 | 15-Jun-2016 | 10-Jun-2016 | 14-Jun-2016 | 13-Jun-2016 |
| Phenols by HPLC (W) | | | 14-Jun-2016 | | | | | | | |
| Sample description | | | 09-Jun-2016 | | | | | | | |
| Total Dissolved Solids | | | 13-Jun-2016 | | | | | | | |
| Total Organic Carbon | | | 14-Jun-2016 | | | | | | | |
| | 12559094 | 12559002 | 12559002 | 12559004 | 12550000 | 1 | 1 | | | |
| Lab Sample No(S) | 13556064 | 13336092 | 13556095 | 13556094 | 13556066 | | | | | |
| Customer Sample Ref. | VF9 | VF10 | VE11 | VF12 | VF3D | | | | | |
| AGS Ref. | | | | | | | | | | |
| Depth | | | | | | | | | | |
| Type | SALINE D | SALINE B | SALINE A | SALINE A | SALINE A | | | | | |
| Anions by Kone (w) | 13- lup 2016 | 13- lun 2016 | 13- lup 2016 | 13- lup 2016 | 13- lup 2016 | | | | | |
| Conductivity (at 20 deg C) | 13- Jun-2016 | 13- Jun-2016 | 13- Jun-2016 | 13- Jun-2016 | 13- Jun-2016 | | | | | |
| Dissolved Metals by ICP-MS | 24-Jun-2016 | 24-Jun-2016 | 24-Jun-2016 | 20-Jun-2016 | 24-Jun-2016 | | | | | |
| Metals by iCan-OES Discolved (W) | 16-Jun-2016 | 16-Jun-2016 | 13-Jun-2016 | 13-Jun-2016 | 16-Jun-2016 | | | | | |
| PAH Spec MS - Aqueous (W) | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | 16-Jun-2016 | | | | | |
| nH Value | 14-Jun-2016 | 13-Jun-2016 | 13-Jun-2016 | 14-Jun-2016 | 10-Jun-2016 | | | | | |
| | 1-1-0011-2010 | 10-001-2010 | 10-0011-2010 | 1-1-0011-2010 | 10-001-2010 | l . | | | | |

CERTIFICATE OF ANALYSIS

| SDG: | 160608-88 | Location: | Valleyfields | Order Number: | 405/8478 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 366319 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Appendix

ALcontrol Laboratories

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 20. For the BSEN 12457-3 two batch process to allow the cumulative release to be for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, and Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol)

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17 Stones/debris are not routinely removed. We always endeavour to take а representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

| 1 | Container with Headspace provided for volatiles analysis |
|---|--|
| 2 | Incorrect container received |
| 3 | Deviation from method |
| 4 | Holding time exceeded before sample received |
| 5 | Samples exceeded holding time before presevation was performed |
| § | Sampled on date not provided |
| • | Sample holding time exceeded in laboratory |
| @ | Sample holding time exceeded due to sampled on date |
| & | Sample Holding Time exceeded - Late arrival of instructions. |
| | |

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised liaht microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

| Asbestos Type | Common Name |
|----------------------|---------------|
| Chrysofile | WhiteAsbestos |
| Amoste | BrownAsbestos |
| Crodobite | Blue Asbestos |
| Fibrous Adindite | - |
| Florous Anthophylite | - |
| Fibrous Trendile | - |

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



SLR Consulting Ltd Floor 2 4/5 Lochside View Edinburgh Park Edinburgh Lanarkshire EH12 9DH

Attention: Zak Ritchie

CERTIFICATE OF ANALYSIS

Date: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: 05 July 2016 H_SLR_EDH 160703-14 405.00481.00033 Valleyfields 367642

We received 2 samples on Friday July 01, 2016 and 2 of these samples were scheduled for analysis which was completed on Tuesday July 05, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan Operations Manager



Alcontrol Laboratories is a trading division of ALcontrol UK Limited Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

| ALcontrol | Laboratories | 055 | | 0.0 | Validated |
|-------------------|-----------------|------------------|--------------------|--------------------|-----------------|
| | | LER | TIFICATE OF ANALY | 515 | |
| SDG: | 160703-14 | Location: | Valleyfields | Order Number: | 405/8514 |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 367642 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |
| | | Pagai | ad Sample Ove | rviow | |
| | | Recen | veu Sample Ove | i view | |
| Lab Sample No(| s) Custe | omer Sample Ref. | AGS | Ref. Depth (r | n) Sampled Date |
| 13699804 | | VF10 | | | 29/06/2016 |

29/06/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

VF3D

13699803

| ALcontrol L | aborator | ies | CI | ER' | TIFICATE OF ANALYSIS | | | Validated |
|-----------------------------------|-------------------------------------|-------------------------|------------------------------------|--|---|---|--------------------|-----------|
| SDG: Job: Client Reference: | 160703-14 H_SLR_ED 405.00481. | DH-58 .00033 | Location: Customer Attention | r: : | Valleyfields SLR Consulting Ltd Zak Ritchie | Order Number: Report Number: Superseded Report: | 405/8514 367642 | |
| LIQUID Results Legend | | Lab Sample N | No(s) | 13699803 13699804 | | | | |
| No Determina Possible | ation | Custome Sample Refer | r œnce | VF3D VF10 | | | | |
| | | AGS Refere | nce | | | | | |
| | | Depth (m |) | | | | | |
| | - | Containe | r | HNO3 Filtered (ALE HNO3 Filtered (ALE | | | | |
| Dissolved Metals by ICP-M | WS | All | NDPs: 0 Tests: 2 | <mark>x</mark> x | | | | |

| ALcontrol | Laboratories |
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CERTIFICATE OF ANALYSIS

| SDG: | 16070 | 3-14 D EDU 59 | | Location: | Valleyfields | Order Number: | 405/8514 | |
|---|--|-------------------------------|---|---|---|---------------|----------|--|
| Client Referenc | e: 405.00 | 0481.00033 | | Attention: | Zak Ritchie | Superseded Re | port: | |
| | | | | | | | | |
| Resul # ISO17025 accre M mCERT5 accre aq Aqueous / settle diss.filt Dissolved / file tot.unfilt Total / unfiltere * Subcontracted i * % recovery of ti check the effici results of indivi samples arent t (F) Trigger breach | Its Legend dited. dited. ed sample. red sample. test. he surrogate standar ency of the method. idual compounds wit corrected for the rec confirmed | rd to The thin overy | bepth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref ab Sample No.(s) | VF10 Water(GW/SW) 29/06/2016 01/07/2016 160703-14 13699804 | VF3D Water(GW/SW) 29/06/2016 01/07/2016 160703-14 13699803 | | | |
| 1-5&+§@ Sample deviation | on (see appendix) | L OD/Units | AGS Reference | | | | | |
| Cadmium (diss.fil | t) | < 0.0001 | TM152 | 0.00217 | 0.000409 | | | |
| | | mg/l | | | # # | | | |
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| ALcontrol L | _aboratories | | | | | Validated |
|-------------------|-----------------|------------|---------------------|--------------------|----------|-----------|
| | | CEF | RTIFICATE OF ANALYS | SIS | | |
| SDG: | 160703-14 | Location: | Valleyfields | Order Number: | 405/8514 | |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 367642 | |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | | |
| | | | | | | |

Table of Results - Appendix

| Method No | Reference | Description | Wet/Dry Sample ¹ | Surrogate Corrected |
|--------------------------------------|---|---------------------------------------|--------------------------------|------------------------|
| TM152 | Method 3125B, AWWA/APHA, 20th Ed., 1999 | Analysis of Aqueous Samples by ICP-MS | | |
| ¹ Applies to Solid sample | es only. DRY indicates samples have been dried at | 35°C. NA = not applicable. | | |

| ALcontrol I | Laboratories | | CEI | RTIFICATE OF ANALYSIS | | | Validated |
|-------------------------|---------------------------|-------------|------------------------|------------------------------------|---------------------------------|--------------------|-----------|
| SDG: Job: | 160703-14 H_SLR_EDH-58 | | Location: Customer: | Valleyfields SLR Consulting Ltd | Order Number: Report Number: | 405/8514 367642 | |
| Client Reference: | 405.00481.00033 | | Attention: | t Completion Dates | Superseded Report: | | |
| L | ab Sample No(s) | 13699804 | 13699803 | t oompletion bates | | | |
| Custo | omer Sample Ref. | VF10 | VF3D | | | | |
| | AGS Ref. | | | | | | |
| | Depth Type | | | | | | |
| issolved Metals by ICP- | MS | 05-Jul-2016 | 05-Jul-2016 | | | | |

CERTIFICATE OF ANALYSIS

| SDG: | 160703-14 | Location: | Valleyfields | Order Number: | 405/8514 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 367642 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Appendix

ALcontrol Laboratories

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 20. For the BSEN 12457-3 two batch process to allow the cumulative release to be for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, and Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol)

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17 Stones/debris are not routinely removed. We always endeavour to take а representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

| 1 | Container with Headspace provided for volatiles analysis |
|---|--|
| 2 | Incorrect container received |
| 3 | Deviation from method |
| 4 | Holding time exceeded before sample received |
| 5 | Samples exceeded holding time before presevation was performed |
| § | Sampled on date not provided |
| • | Sample holding time exceeded in laboratory |
| 0 | Sample holding time exceeded due to sampled on date |
| & | Sample Holding Time exceeded - Late arrival of instructions. |
| | |

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised liaht microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

| Asbestos Type | Common Name | |
|----------------------|---------------|--|
| Chrysofile | WhiteAsbestos | |
| Amosite | BrownAsbestos | |
| Crodobite | Blue Asbestos | |
| Fibraus Adinate | - | |
| Florous Anthophylite | - | |
| Fibrous Trendile | - | |

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



SLR Consulting Ltd Floor 2 4/5 Lochside View Edinburgh Park Edinburgh Lanarkshire EH12 9DH

Attention: Zak Ritchie

CERTIFICATE OF ANALYSIS

Date: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: 16 September 2016 H_SLR_EDH 160911-7 405.00481.00033 Valleyfields 378274

We received 15 samples on Friday September 09, 2016 and 15 of these samples were scheduled for analysis which was completed on Friday September 16, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:

Sonia McWhan Operations Manager



CERTIFICATE OF ANALYSIS

Validated

| - | | | | | |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| SDG: | 160911-7 | Location: | Valleyfields | Order Number: | 405/8599 |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 378274 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Received Sample Overview

| Lab Sample No(s) | Customer Sample Ref. | AGS Ref. | Depth (m) | Sampled Date |
|------------------|----------------------|----------|-----------|--------------|
| 14132054 | ES1 | | | 06/09/2016 |
| 14132053 | ES2 | | | 06/09/2016 |
| 14132060 | PFA | | | 06/09/2016 |
| 14132055 | TD | | | 07/09/2016 |
| 14132052 | VF1 | | | 07/09/2016 |
| 14132051 | VF4 | | | 07/09/2016 |
| 14132049 | VF5 | | | 07/09/2016 |
| 14132050 | VF6 | | | 07/09/2016 |
| 14132048 | VF7 | | | 07/09/2016 |
| 14132056 | VF8 | | | 07/09/2016 |
| 14132059 | VF9 | | | 06/09/2016 |
| 14132047 | VF10 | | | 06/09/2016 |
| 14132057 | VF11 | | | 06/09/2016 |
| 14132058 | VF12 | | | 07/09/2016 |
| 14132046 | VF3D | | | 06/09/2016 |

Only received samples which have had analysis scheduled will be shown on the following pages.
| ALcontrol L | aboratorie. | S | С | EF | ۲۶ | ΊF | IC | ; A] | ГE | 0 | F | AI | ٩V | ۱Ľ | YS | SIS | ; | | | | | | | | | | | | |
|-----------------------------------|--|-------------------------|----------------------------------|---------------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|---|------------------------|-------------------------|--|-----------------------------|-------------------------|------------------------|---------------------------|-------------------------|------------------------|------------------|
| SDG: Job: Client Reference: | 160911-7 H_SLR_EDH-58 405.00481.0003 | 3 | Location Custome Attention | : r: :: | V S Z | alley LR (ak R | /fiel Con titch | ds sulti nie | ng L | td | | | | | | | | | | Or Re Su | de po pe | r N rt I rse | um Nur ede | nbe mb d F | r: er: Rep | oor | t: | 4 3 | 05/8599 78274 |
| LIQUID Results Legend | | Lab Sample I | No(s) | | | 14132055 | | | 14132052 | | | 14132051 | | | 14132049 | | | 14132050 | | | | 14132048 | | | 14132056 | | | 14132059 | |
| N No Determina Possible | ntion | Custome Sample Refer | r ence | | | TD | | | VF1 | | | VF4 | | | VF5 | | | VF6 | | | | VE7 | | | VF8 | | | VF9 | |
| | | AGS Refere | nce | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Depth (m |) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Containe | r | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNU3 Hiltered (ALE204) | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | Dissolved Metals Preser | U.3I glass butle (ALE227 HNO3 Filtered (ALE204) | o El Alassa hattic (ALEZUO) | Dissolved Metals Preser | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE227 | 500ml Plastic (Al E208) | HNO3 Filtered (ALE204) | |
| Anions by Kone (w) | All | | NDPs: 0 Tests: 12 | | x | | | x | | | x | | | x | | | x | | | x | | | > | 2 | | | x | | |
| Conductivity (at 20 deg.C) | All | | NDPs: 0 Tests: 12 | - | x | | | x | | | x | | | x | | | x | | | x | | | > | | | | x | | |
| Dissolved Metals by ICP-MS | All | | NDPs: 0 Tests: 12 | - | | x | 2 | | × | i i i | | x | | | x | | | × | C 100 Control of the second | | | x | | | x | | | x | |
| Fluoride | All | | NDPs: 0 Tests: 12 | | x | | | x | | | x | | | x | | | x | | | x | | | > | C | | | x | | |
| Mercury Dissolved | All | | NDPs: 0 Tests: 12 | | | <mark>x</mark> | | | × | | 2 | x | | 2 | <mark><</mark> | | 2 | K | | | x | | | x | | | × | 2 | |
| Metals by iCap-OES Dissolved (| N) All | | NDPs: 0 Tests: 12 | | | x | 2 | | x | ſ | | x | | | x | | | × | <u>(</u> | | | x | | | x | | | x | |
| PAH Spec MS - Aqueous (W) | All | | NDPs: 0 Tests: 12 | x | | | x | | | x | | | x | | | x | | | x | | |) | K | | | x | | | |
| pH Value | All | | NDPs: 0 Tests: 12 | | x | | | x | | | x | | | x | | | x | | | x | | | > | 2 | | | x | | |

| ALcontrol L | Laboratori | es | C | FP | TIF | | ۸т | F (| ٦E | ۸۸ | 10 | 1 7 9 | | Validated |
|------------------------------------|--|----------------------|-----------------------------------|----------------------------|-------------------------|---|---|---|------------------------|------------------------|---------------------------|---|---|-----------|
| SDG: Job: Client Reference: | 160911-7 H_SLR_EDH- 405.00481.00 | 58 033 | Location: Custome Attention | r: | Valle SLR Zak | eyfield Cons Ritchi | ds sulting ie | y Ltd | | | | | Order Number: 405/8599 Report Number: 378274 Superseded Report: | |
| LIQUID Results Legend X Test | | Lab Sample | e No(s) | | | 14132047 | | 14132057 | | 14132058 | | 14132046 | | |
| No Determin Possible | ation | Custom Sample Ref | er erence | | : | VF10 | | VF11 | | VF12 | | VF3D | | |
| | | AGS Refe | ence | | | | | | | | | | | |
| | | Depth (| m) | | | | | | | | | | | |
| | | Contair | ier | 0.5l glass bottle (ALE208) | Dissolved Metals Preser | 0.5l glass bottle (ALE227 HNO3 Filtered (ALE204) | Dissolved Metals Preser 500ml Plastic (ALE208) | 0.5l glass bottle (ALE227 HNO3 Filtered (ALE204) | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5I glass bottle (ALE227 | HNO3 Filtered (ALE204) Dissolved Metals Preser | | |
| Anions by Kone (w) | | All | NDPs: 0 Tests: 12 | , | 4 | | x | | x | |) | K | | |
| Conductivity (at 20 deg.C) | | All | NDPs: 0 Tests: 12 | , | (| | x | | x | |) | K | | |
| Dissolved Metals by ICP-MS | | All | NDPs: 0 Tests: 12 | | | <mark>x</mark> | | x | | x | | x | | |
| Fluoride | | All | NDPs: 0 Tests: 12 |) | <u>د</u> | | x | | x | |) | K | | |
| Mercury Dissolved | | All | NDPs: 0 Tests: 12 | | x | | × | |) | <mark>(</mark> | | x | | |
| Metals by iCap-OES Dissolved (| (W) | All | NDPs: 0 Tests: 12 | | | x | | x | | x | | X | | |
| PAH Spec MS - Aqueous (W) | | All | NDPs: 0 Tests: 12 | x | | x | | x | | | x | | | |
| JH Value | | All | NDPs: 0 Tests: 12 |) | C | | x | | x | |) | K | | |

| ALcontrol Lat | oratories | 5 | C | ER | TIF | | ΓE | OF ANALYSIS | | |
|---|--|-------------------------|----------------------------------|----------------------------|---|---|-----------------------|-------------|---|--------------------|
| SDG: 16 Job: H Client Reference: 40 | 60911-7 _SLR_EDH-58 05.00481.00033 | | Location Custome Attention | : er: n: | Valley SLR C Zak R | fields Consultin itchie | ng Lto | | Order Number: Report Number: Superseded Report: | 405/8599 378274 |
| Saline Water (Sal W |) | | | | 14 | | 14 | | | |
| Results Legend | | Lab Sample I | No(s) | | 13205 | | 13205 | | | |
| X Test | | | | | 4 | | υ. Ω | | | |
| No Determinatio Possible | n | Custome Sample Refer | r ence | | ES1 | | ES2 | | | |
| | | AGS Refere | nce | | | | | | | |
| | | Depth (m |) | | | | | | | |
| | | Containe | r | 0.5l glass bottle (ALE208) | HNO3 Filtered (ALE204 Dissolved Metals Prese | 500ml Plastic (ALE208) 0.5l glass bottle (ALE22) | HNO3 Filtered (ALE204 | | | |
| Anions by Kone (w) | All | | NDPs: 0 Tests: 2 | , | <pre>c</pre> | x | | | | |
| Conductivity (at 20 deg.C) | All | | NDPs: 0 Tests: 2 | | (| x | | | | |
| Dissolved Metals by ICP-MS | All | | NDPs: 0 Tests: 2 | | x | | x | | | |
| luoride | All | | NDPs: 0 Tests: 2 | , | (| x | | | | |
| lercury Dissolved | All | | NDPs: 0 Tests: 2 | | x | | x | | | |
| /letals by iCap-OES Dissolved (W) | All | | NDPs: 0 Tests: 2 | | x | | x | | | |
| PAH Spec MS - Aqueous (W) | All | | NDPs: 0 Tests: 2 | x | | x | | | | |
| H Value | All | | NDPs: 0 Tests: 2 | , | <mark>(</mark> | x | | | | |

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Validated

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| SDG: 1609' Job: H_SL Client Reference: 405.0 | 11-7 R_EDH-58 0481.00033 | | Location: Va Customer: SI Attention: Za | alleyfields _R Consulting Ltd ak Ritchie | | Order Number: Report Number Superseded Re | 405/8599 : 378274 port: | |
|--|--------------------------------|---|---|--|----------------------------|---|-------------------------------|----------------------------|
| Results Legend | C | ustomer Sample Ref. | ES1 | ES2 | TD | VF1 | VF4 | VF5 |
| # ISO17025 accredited. M mCERTS accredited. | | | | | | | | |
| diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate stand | dard to | Depth (m) Sample Type Date Sampled Sample Time | Saline Water (Sal W) 06/09/2016 | Saline Water (Sal W) 06/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 |
| check the efficiency of the metho results of individual compounds | d. The within | Date Received | 09/09/2016 160911-7 | 09/09/2016 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 |
| (F) Trigger breach confirmed | ecovery | Lab Sample No.(s) | 14132054 | 14132053 | 14132055 | 14132052 | 14132051 | 14132049 |
| Component | LOD/Units | Method | | | | | | |
| Fluoride | <0.5 mg/l | TM104 | | | <0.5 # | <0.5 # | 0.517 # | <0.5 # |
| Conductivity @ 20 deg.C | <0.005 mS/cm | TM120 | | | | 24.5 # | 27.4 # | 23.7 # |
| Aluminium (diss.filt) | <0.002 mg/l | TM152 | | | 0.0703 | <0.002 | <0.002 # | <0.002 # |
| Antimony (diss.filt) | <0.00016 mg/l | TM152 | | | # 0.00154 # | | # 0.000178 # | |
| Arsenic (diss.filt) | <0.00051 | TM152 | | | 0.00607 | 0.00117 | 0.00127 | 0.00109 |
| Boron (diss filt) | mg/l | TM152 | | | 7 57 | # 0.57 | 7.03 | 2 91 |
| | 40.000 mg/i | TWITE | | | # | 0.07 # | # | 2.51 |
| Cadmium (diss.filt) | <0.00008 mg/l | TM152 | | | 0.000304 # | <0.00008 # | 0.000174 # | <0.00008 # |
| Chromium (diss.filt) | <0.0012 mg/l | TM152 | | | <0.0012 # | <0.0012 # | <0.0012 # | <0.0012 # |
| Copper (diss.filt) | <0.00085 mg/l | TM152 | | | <0.00085 # | <0.00085 # | <0.00085 # | <0.00085 # |
| Manganese (diss.filt) | <0.00076 | TM152 | | | 0.117 # | 0.179 | 0.037 # | 0.0277 # |
| Molybdenum (diss.filt) | <0.00062 mg/l | TM152 | | | # 0.667 # | # 0.00246 # | 0.22 # | 0.00164 # |
| Nickel (diss.filt) | <0.00044 | TM152 | | | 0.000602 | <0.00044 # | 0.000669 # | <0.00044 # |
| Selenium (diss.filt) | <0.00081 mg/l | TM152 | | | 0.00178 | <0.00081 # | 0.00139 | 0.00462 # |
| Vanadium (diss.filt) | <0.0013 mg/l | TM152 | | | 0.0464 # | <0.0013 # | <0.0013 # | 0.00212 # |
| Zinc (diss.filt) | <0.0013 mg/l | TM152 | | | <0.0013 | 0.0013 | <0.0013 # | <0.0013 # |
| Mercury (diss.filt) | <0.00001 mg/l | TM183 | | | <0.00001 # | <0.00001 # | <0.00001 # | <0.00001 # |
| Sulphate | <2 mg/l | TM184 | | | 1600 # | 841 # | 1650 # | 338 # |
| Chloride | <2 mg/l | TM184 | | | 11000 # | 10700 # | 11500 # | 10700 # |
| Calcium (diss.filt) | <0.012 mg/l | TM228 | | | 1160 # | 683 # | 616 # | 426 # |
| Sodium (diss.filt) | <0.076 mg/l | TM228 | | | 5580 # | 4820 # | 5870 # | 5890 # |
| Magnesium (diss.filt) | <0.036 mg/l | TM228 | | | 232 # | 690 # | 580 # | 523 # |
| Potassium (diss.filt) | <1 mg/l | TM228 | | | 289 # | 154 # | 262 # | 218 # |
| рН | <1 pH Units | TM256 | | | 8.08 # | 7.91 # | 7.9 # | 8.04 # |
| Fluoride | <0.5 mg/l | TM104 | 0.841 | 0.789 | | | | |
| Conductivity @ 20 deg.C | <0.005 mS/cm | TM120 | 38.4 # | 36.1 # | | | | |
| Aluminium (diss.filt) | <0.002 mg/l | TM152 | 0.00212 | 0.0053 | | | | |
| Antimony (diss.filt) | <0.00016 mg/l | TM152 | 0.000471 | <0.00096 | | | | |
| Arsenic (diss.filt) | <0.00051 mg/l | TM152 | 0.00229 | 0.00461 | | | | |
| Boron (diss.filt) | <0.005 mg/l | TM152 | 3.07 | 3.43 | | | | |
| Cadmium (diss.filt) | <0.00008 mg/l | TM152 | <0.0008 | <0.00048 | | | | |
| Chromium (diss.filt) | <0.0012 mg/l | TM152 | <0.0012 | <0.0072 | | | | |
| Copper (diss.filt) | <0.00085 mg/l | TM152 | < 0.00085 | 0.00142 | | | | |

CERTIFICATE OF ANALYSIS

| Results Legend | | Customer Sample Ref. | ES1 | ES2 | TD | VF1 | VF4 | VF5 |
|--|-----------------|-----------------------------|------------------------------------|------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| M mCERTS accredited. | | | | | | | | |
| aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. | | Depth (m) | | | | | | |
| tot.unfilt Total / unfiltered sample. * Subcontracted test. | | Sample Type Date Sampled | Saline Water (Sal W) 06/09/2016 | Saline Water (Sal W) 06/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 |
| ** % recovery of the surrogate standa | rd to | Sample Time | | | | | | |
| results of individual compounds wi | thin | Date Received SDG Ref | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 |
| samples aren't corrected for the rec (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 14132054 | 14132053 | 14132055 | 14132052 | 14132051 | 14132049 |
| 1-5&+§@ Sample deviation (see appendix) | LOD/Uni | AGS Reference | | | | | | |
| Manganese (diss.filt) | < 0.0007 | 6 TM152 | 0.0128 | 0.0507 | | | | |
| U () | mg/l | | | | | | | |
| Molybdenum (diss.filt) | <0.0006 | 2 TM152 | 0.0402 | 0.0565 | | | | |
| | mg/l | | | | | | | |
| Nickel (diss.filt) | <0.0004 | 4 TM152 | 0.000526 | 0.000569 | | | | |
| | mg/l | | | | | | | |
| Selenium (diss.filt) | <0.0008 | 11 TM152 | <0.00081 | <0.00486 | | | | |
| Vanadium (diss filt) | <0.001 | 3 TM152 | 0.00656 | <0.0078 | | | | |
| | <0.001. ma/l | 5 HWH52 | 0.00030 | ~0.0070 | | | | |
| Zinc (diss.filt) | < 0.001 | 3 TM152 | 0.00139 | <0.0013 | | | | |
| | mg/l | | | | | | | |
| Mercury (diss.filt) | <0.0000 | 1 TM183 | <0.00001 | <0.00001 | | | | |
| | mg/l | | | | | | | |
| Sulphate | <2 mg/ | /I TM184 | 2350 | 2200 | | | | |
| | | | | | | | | |
| Chloride | <2 mg/ | /I TM184 | 17200 | 16200 | | | | |
| Optoiner (diss fill) | 10 010 - | // TM000 | 200 | 200 | | | | |
| Calcium (diss.fiit) | <0.012 m | 1g/I I IVI228 | 396 | 392 | | | | |
| Sodium (diss filt) | <0.076 m | ng/L TM228 | 9700 | 8160 | | | | |
| | -0.07011 | 19/1 110220 | 5700 | 0100 | | | | |
| Magnesium (diss.filt) | <0.036 m | ng/l TM228 | 1100 | 905 | | | | |
| U () | | 5 | | | | | | |
| Potassium (diss.filt) | <1 mg/ | /I TM228 | 363 | 346 | | | | |
| | | | | | | | | |
| рН | <1 pH Ur | nits TM256 | 7.9 | 7.86 | | | | |
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CERTIFICATE OF ANALYSIS

| Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. | | Customer Sample Ref. | VF6 | VF7 | VF8 | VF9 | VF10 | VF11 |
|---|------------------------|-----------------------------|--|----------------------------|--|--|----------------------------|----------------------------|
| diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. | | Sample Type Date Sampled | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 06/09/2016 | Water(GW/SW) 06/09/2016 | Water(GW/SW) 06/09/2016 |
| ** % recovery of the surrogate standa check the efficiency of the method. | rd to The | Sample Time | | | | | | |
| results of individual compounds wi | thin | Date Received SDG Ref | 160911-7 | 160911-7 | 160911-7 | 160911-7 | 160911-7 | 160911-7 |
| (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 14132050 | 14132048 | 14132056 | 14132059 | 14132047 | 14132057 |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | | |
| Component Fluoride | LOD/Units <0.5 mg/l | 5 Method TM104 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Conductivity @ 20 deg C | <0.005 | TM120 | # 8 44 | # 20.3 | 26.8 | 26 | # | # 1 79 |
| | mS/cm | 111120 | # | # | # | # | # | # |
| Aluminium (diss.filt) | <0.002 mg | /I TM152 | 0.118 # | <0.002 # | <0.002 # | <0.002 # | <0.002 # | <0.002 # |
| Antimony (diss.filt) | <0.00016 mg/l | TM152 | 0.000952 # | <0.00016 # | <0.00016 # | <0.00016 # | <0.00016 # | <0.00016 # |
| Arsenic (diss.filt) | <0.00051 mg/l | TM152 | 0.0364 # | 0.00124 # | 0.000659 # | 0.00233 # | 0.00208 # | <0.00051 # |
| Boron (diss.filt) | <0.005 mg | /I TM152 | 6.39 # | 0.477 # | 6.38 # | 0.901 # | 7.02 | 0.311 # |
| Cadmium (diss.filt) | <0.00008 ma/l | TM152 | 0.000171 # | <0.00008 # | 0.000143 # | <0.00008 # | 0.000134 # | <0.00008 # |
| Chromium (diss.filt) | <0.0012 ma/l | TM152 | <0.0012 # | <0.0012 # | <0.0012 # | <0.0012 # | <0.0012 # | <0.0012 # |
| Copper (diss.filt) | <0.00085 | TM152 | <0.00085 # | <0.00085 # | 0.00155 # | <0.00085 # | | <0.00085 # |
| Manganese (diss.filt) | <0.00076 | TM152 | 0.0116 # | 0.297 # | 0.00999 # | # 0.44 # | 0.244 # | 0.0627 |
| Molybdenum (diss.filt) | <0.00062 | TM152 | 0.302 # | # 0.0146 # | 0.184 # | # 0.0489 # | 0.278 # | 0.00335 |
| Nickel (diss.filt) | <0.00044 | TM152 | | ۳ 0.000758 # | 0.00128 | 0.000937 # | 0.00071 # | |
| Selenium (diss.filt) | <0.00081 | TM152 | 0.00127 # | * <0.00081 # | * <0.00081 # | ** <0.00081 # | | ~0.00081 # |
| Vanadium (diss.filt) | <0.0013 | TM152 | | // # <0.0013 | | 0.00367 | # <0.0013 | <0.0013 |
| Zinc (diss.filt) | <0.0013 | TM152 | # <0.0013 | # 0.00272 | # 0.00327 | # <0.0013 | # <0.0013 | # 0.0015 # |
| Mercury (diss.filt) | <0.00001 | TM183 | // *********************************** | # <0.00001 # | // *********************************** | // *********************************** | # <0.00001 # | # <0.00001 # |
| Sulphate | <2 mg/l | TM184 | 470 # | # 454 # | # 1660 # | # 759 # | # 597 # | 6.9 # |
| Chloride | <2 mg/l | TM184 | 3000 # | 9060 # | # 11200 # | # 11700 # | # 6430 # | 380 # |
| Calcium (diss.filt) | <0.012 mg | /I TM228 | 298 # | ، " 776 | | | 499 # | 104 # |
| Sodium (diss.filt) | <0.076 mg | /I TM228 | | 3770 # | 5930 # | | | 256 # |
| Magnesium (diss.filt) | <0.036 mg | /I TM228 | 29.6 | 508 # | | 549 # | 222 # | 25.8 |
| Potassium (diss.filt) | <1 mg/l | TM228 | 71 # | | 254 # | 254 # | | 27.4 |
| рН | <1 pH Unit | s TM256 | 7.89 | 7.45 # | 7.53 | 7.69 | 7.66 | 7.6 |
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CERTIFICATE OF ANALYSIS

| Results Legend | | Customer Sample Ref. | VF12 | VF3D | | |
|--|--|--------------------------|--------------|--------------|------|------|
| # ISO17025 accredited. M mCERTS accredited | | | | | | |
| aq Aqueous / settled sample. | | Denth (m) | | | | |
| diss.filt Dissolved / filtered sample. | | Deptn (m) Sample Type | Water(GW/SW) | Water(GW/SW) | | |
| tot.unfilt Total / unfiltered sample. * Subcontracted test. | | Date Sampled | 07/09/2016 | 06/09/2016 | | |
| ** % recovery of the surrogate standa | ird to | Sample Time | | | | |
| check the efficiency of the method. | The | Date Received | 09/09/2016 | 09/09/2016 | | |
| samples aren't corrected for the rec | covery | SDG Ref | 160911-7 | 160911-7 | | |
| (F) Trigger breach confirmed | | Lab Sample No.(s) | 14132058 | 14132046 | | |
| Component | | AGS Reference | | | | |
| Eluorido | <0.5 m | | <0.5 | <0.5 | | |
| lidolide | ∼ 0.3 III | g/i iivii04 | ۳.J ۳ | ۳0.J ۳ | | |
| | | | # | # | | |
| Conductivity @ 20 deg.C | <0.00 | 5 TM120 | 1.27 | 2.8 | | |
| | mS/cn | ו | # | # | | |
| Aluminium (diss.filt) | <0.002 r | ng/l TM152 | <0.002 | <0.002 | | |
| | | | # | # | | |
| Antimony (diss filt) | <0.000 | 16 TM152 | <0.00016 | <0.00016 | | |
| | -0.000 ma/l | 10 110102 | 40.00010 | 40.00010 | | |
| | 111g/1 | F4 T1450 | # | # | | |
| Arsenic (diss.filt) | <0.000 | 51 IM152 | <0.00051 | 0.000528 | | |
| | mg/l | | # | # | | |
| Boron (diss.filt) | <0.005 r | ng/l TM152 | 0.308 | 0.407 | | |
| | | | # | # | | |
| Cadmium (diss filt) | <0.000 | 08 TM152 | <0.00008 | <0.00008 | | |
| | ma/l | | 4 | 4 | | |
| Observations (d)(1) | 111y/l | 0 714/50 | # | # | | |
| Chromium (diss.filt) | <0.001 | 2 IM152 | <0.0012 | <0.0012 | | |
| | mg/l | | # | # | | |
| Copper (diss.filt) | <0.000 | 85 TM152 | <0.00085 | <0.00085 | | |
| | mg/l | | # | # | | |
| Manganese (diss filt) | <0.000 | 76 TM152 | 0 0741 | 0.0977 | | |
| | -0.000 ma/l | | 4 | 4 | | |
| | 111g/1 | 00 TM450 | # | # | | |
| Molybdenum (diss.filt) | <0.000 | 62 IM152 | 0.000819 | 0.000763 | | |
| | mg/l | | # | # | | |
| Nickel (diss.filt) | <0.000 | 44 TM152 | 0.000526 | <0.00044 | | |
| | mg/l | | # | # | | |
| Selenium (diss filt) | <0.000 | 81 TM152 | <0.00081 | <0.00081 | | |
| | -0.0000 ma/l | | 40.00001 | 40.00001 | | |
| | 111y/1 | 0 714/50 | # | # | | |
| Vanadium (diss.filt) | <0.001 | 3 IM152 | <0.0013 | 0.00132 | | |
| | mg/l | | # | # | | |
| Zinc (diss.filt) | <0.001 | 3 TM152 | 0.00341 | 0.00723 | | |
| | mg/l | | # | # | | |
| Mercury (diss filt) | <0.000 | 01 TM183 | <0.00001 | <0.00001 | | |
| | -0.000 | 111100 | -0.00001 # | -0.00001 # | | |
| 0.11.1 | ing/i | // T1404 | # | # | | |
| Sulphate | <2 mg | j/I IM184 | <2 | <2 | | |
| | | | # | # | | |
| Chloride | <2 mg | /I TM184 | 286 | 903 | | |
| | | | # | # | | |
| Calcium (diss filt) | <0.012 r | ng/ TM228 | 98.4 | 138 | | |
| | -0.0121 | IIg/I IIWZZO | | 100 # | | |
| | 0.070 | # T 1000 | # | # | | |
| Sodium (diss.filt) | <0.076 r | ng/I I M228 | 143 | 378 | | |
| | | | # | # | | |
| Magnesium (diss.filt) | <0.036 r | ng/I TM228 | 22.5 | 48.7 | | |
| | | | # | # | | |
| Potassium (diss.filt) | <1 mc | /I TM228 | 26.2 | 30.2 | | |
| . , | ^۳ | | # | # | | |
| nH | <1 r⊔ 1 | nite TM256 | π Ω 11 | π 7 71 | | |
| ווק | <i ph="" td="" u<=""><td>11115 I IVIZOD</td><td>0.11</td><td>1.11</td><td></td><td></td></i> | 11115 I IVIZOD | 0.11 | 1.11 | | |
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| ALcontrol Labor | ratories | 5 | ~== | | | | | | Validated |
|--|--------------------------------|--|---|---|------------------------------------|---|---|------------------------------------|------------------------------------|
| SDG: 16091 Job: H_SL Client Reference: 405 0 | 11-7 R_EDH-58 0481.00033 | | CER Location: Customer: Attention: | Valleyfields SLR Consulting Ltd Zak Ritchie | NALYSIS | | Order Number: Report Number: Superseded Rep | 405/8599 378274 ort: | |
| PAH Spec MS - Aqueou | s (W) | | | | | | | | |
| Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. | | Customer Sample Ref. | E\$1 | ES2 | TD | | VF1 | VF4 | VF5 |
| diss.tilt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate stand | lard to | Sample Type Date Sampled Sample Time | Saline Water (Sal W) 06/09/2016 | Saline Water (Sal W) 06/09/2016 | Water(GW/SW) 07/09/2016 | | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 | Water(GW/SW) 07/09/2016 |
| check the efficiency of the metho results of individual compounds samples aren't corrected for the r | d. The within ecovery | Date Received SDG Ref | 09/09/2016 160911-7 14132054 | 09/09/2016 160911-7 14132053 | 09/09/2016 160911-7 14132055 | | 09/09/2016 160911-7 14132052 | 09/09/2016 160911-7 14132051 | 09/09/2016 160911-7 14132049 |
| (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | 14102004 | 14102000 | 14102000 | | 14102002 | 14102001 | 14102040 |
| Component Naphthalene (ag) | <0.00 | D1 TM178 | | | <0.0001 | | <0.0001 | <0.0001 | <0.0001 |
| Acenaphthene (aq) | mg/l <0.000 | 015 TM178 | | | <0.000015 | # | # <0.000015 | # <0.000015 | # <0.000015 |
| | mg/l | | | | 0.000044 | # | # | # | # |
| Acenaphthylene (aq) | <0.000 mg/l | 011 IM178 | | | <0.000011 | # | <0.000011 # | <0.000011 # | <0.000011 # |
| Fluoranthene (aq) | <0.000 mg/l | 017 TM178 | | | <0.000017 | # | <0.000017 # | <0.000017 # | <0.000017 # |
| Anthracene (aq) | <0.000 mg/l | 015 TM178 | | | <0.000015 | # | <0.000015 # | <0.000015 # | <0.000015 # |
| Phenanthrene (aq) | <0.000 mg/l | D22 TM178 | | | <0.000022 | # | <0.000022 # | <0.000022 # | <0.000022 # |
| Fluorene (aq) | <0.000 mg/l | 014 TM178 | | | <0.000014 | # | <0.000014 # | <0.000014 # | <0.000014 # |
| Chrysene (aq) | <0.000 mg/l | 013 TM178 | | | <0.000013 | # | <0.000013 # | <0.000013 # | <0.000013 # |
| Pyrene (aq) | <0.000 mg/l | 015 TM178 | | | <0.000015 | # | <0.000015 # | <0.000015 # | 0.000016 # |
| Benzo(a)anthracene (aq) | <0.000 mg/l | 017 TM178 | | | <0.000017 | # | <0.000017 # | <0.000017 # | <0.000017 # |
| Benzo(b)fluoranthene (aq) | <0.000 mg/l | 023 TM178 | | | <0.000023 | # | <0.000023 # | <0.000023 # | <0.000023 # |
| Benzo(k)fluoranthene (aq) | <0.000 mg/l | 027 TM178 | | | <0.000027 | # | <0.000027 # | <0.000027 # | <0.000027 # |
| Benzo(a)pyrene (aq) | <0.000 mg/l | 009 TM178 | | | <0.00009 | # | <0.00009 | <0.00009 | <0.00009 # |
| Dibenzo(a,h)anthracene (aq) | <0.000 mg/l | D16 TM178 | | | <0.000016 | # | <0.000016 # | <0.000016 # | <0.000016 # |
| Benzo(g,h,i)perylene (aq) | <0.000 mg/l | 016 TM178 | | | <0.000016 | # | <0.000016 # | <0.000016 # | <0.000016 # |
| Indeno(1,2,3-cd)pyrene (aq) | <0.000 mg/l | 014 TM178 | | | <0.000014 | # | <0.000014 # | <0.000014 # | <0.000014 # |
| PAH, Total Detected USEPA 16 (aq) | <0.000 mg/l | 344 TM178 | | | <0.000344 | | <0.000344 | <0.000344 | <0.000344 |
| Naphthalene (aq) | <0.00 mg/l | 01 TM178 | <0.0001 | <0.0001 # # | | | | | |
| Acenaphthene (aq) | <0.000 mg/l | 015 TM178 | <0.000015 | <0.000015 # # | | | | | |
| Acenaphthylene (aq) | <0.000 mg/l | 011 TM178 | <0.000011 | <0.000011 # # | | | | | |
| Fluoranthene (aq) | <0.000 mg/l | D17 TM178 | <0.000017 | 0.000063 | | | | | |
| Anthracene (aq) | <0.000 mg/l | 015 TM178 | <0.000015 | <0.000015 # # | | | | | |
| Phenanthrene (aq) | <0.000 mg/l | 022 TM178 | <0.000022 | 0.000029 | | | | | |
| Fluorene (aq) | <0.000 mg/l | 014 TM178 | <0.000014 | <0.000014 # | | | | | |
| Chrysene (aq) | <0.000 mg/l | D13 TM178 | <0.000013 | 0.000035 | | | | | |
| Pyrene (aq) | <0.000 mg/l | 015 TM178 | <0.000015 | 0.000065 | | | | | |
| Benzo(a)anthracene (aq) | <0.000 mg/l | 017 TM178 | <0.000017 | 0.000025 | | | | | |
| Benzo(b)fluoranthene (aq) | <0.000 mo/l | 023 TM178 | <0.000023 | 0.000044 # # | | | | | |
| Benzo(k)fluoranthene (aq) | <0.000 ma/l | 027 TM178 | <0.000027 | <0.000027 # <u>#</u> | | | | | |
| Benzo(a)pyrene (aq) | <0.000 mo/l | 009 TM178 | <0.00009 | 0.00003 # # | | | | | |
| Dibenzo(a,h)anthracene (aq) | <0.000 mo/l | D16 TM178 | <0.000016 | <0.000016 | | | | | |
| Benzo(g,h,i)perylene (aq) | <0.000 mg/l | 016 TM178 | <0.000016 | 0.000034 | | | | | |

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CERTIFICATE OF ANALYSIS

| PAH Spec MS - Aqueous | 5 (VV) | | | | | | | |
|--|--------------------------|---|--|--|--|--|--|--|
| Results Legend # ISO17025 accredited. M mCERTS accredited. | C | ustomer Sample Ref. | ES1 | ES2 | TD | VF1 | VF4 | VF5 |
| aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. * % recovery of the surrogate stand check the efficiency of the method results of individual compounds w | ard to . The ithin | Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref | Saline Water (Sal W) 06/09/2016 09/09/2016 160911-7 | Saline Water (Sal W) 06/09/2016 09/09/2016 160911-7 | Water(GW/SW) 07/09/2016 09/09/2016 160911-7 | Water(GW/SW) 07/09/2016 09/09/2016 160911-7 | Water(GW/SW) 07/09/2016 09/09/2016 160911-7 | Water(GW/SW) 07/09/2016 09/09/2016 160911-7 |
| (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 14132054 | 14132053 | 14132055 | 14132052 | 14132051 | 14132049 |
| 1-5&+§@ Sample deviation (see appendix) | LOD/Units | AGS Reference | | | | | | |
| Indeno(1,2,3-cd)pyrene (aq) | < 0.000014 | TM178 | <0.000014 | 0.000022 | | | | |
| | mg/l | TN4470 | -0.000244 | 0.000247 | | | | |
| PAH, Total Detected USEPA 16 | <0.000344 ma/l | IM178 | <0.000344 | 0.000347 | | | | |
| (***) | gr | | | | | | | |
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| SDC- | 160011 7 | | Location | Valloufielde | | | 105/0500 | |
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| SDG: Job: Client Poference: | H_SLR_EDH-58 | 3 | Location: Customer: | valleytields SLR Consulting Ltd Zak Ritchic | | Order Number: Report Number: Superseded Per | 405/8599 378274 | |
| AH Spec MS - A | 405.00461.0003 | 3 | Attention: | Zak Ritchie | | Superseded Rep | ion. | |
| Results L # ISO17025 accredited | egend | Customer Sample Ref. | VF6 | VF7 | VF8 | VF9 | VF10 | VF11 |
| M mCERTS accredited aq Aqueous / settled sa | Imple. | Depth (m) | | | | | | |
| liss.filt Dissolved / filtered s ot.unfilt Total / unfiltered sar | ample. nple. | Sample Type | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) |
| * Subcontracted test. ** % recovery of the su | progate standard to | Date Sampled Sample Time | 07/09/2016 | 07/09/2016 | 07/09/2016 | 06/09/2016 | 06/09/2016 | 06/09/2016 |
| results of individual samples aren't corre | compounds within | Date Received SDG Ref | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 | 09/09/2016 160911-7 |
| (F) Trigger breach conf -5&+§@ Sample deviation (s | rmed ee appendix) | Lab Sample No.(s) AGS Reference | 14132050 | 14132048 | 14132056 | 14132059 | 14132047 | 14132057 |
| omponent | LOD/U | Jnits Method | | | | | | |
| laphthalene (aq) | <0.0 | 001 TM178 | <0.0001 | <0.0001 | <0.0001 # # | <0.0001 # | <0.0001 # | <0.0001 |
| cenaphthene (aq) | <0.00 | 0015 TM178 | <0.000015 | <i>"</i> <0.000015 | <i>* * * * * * * * * *</i> | <0.000015 | <0.000015 | <0.000015 |
| | mg | ı/I | | # | # # | # | # | |
| cenaphthylene (aq) | <0.00 | 0011 TM178 | <0.000011 | <0.000011 | <0.000011 | <0.000011 | <0.000011 | <0.000011 |
| luoranthene (ag) | <0.00 | 0017 TM178 | <0.000017 | # <0.000017 | # # <0.000017 | # <0.000017 | <0.000017 | <0.000017 |
| laorananono (aq) | mg | j/l | 0.00001 | # | # # | # | # | 0.000011 |
| nthracene (aq) | <0.00 | 0015 TM178 | <0.000015 | <0.000015 | <0.000015 | <0.000015 | <0.000015 | <0.000015 |
| Phenanthropo (ca) | mg | 1/I 0022 TM4179 | <0.000000 | # | # # | <0 000022 | # | <0.000000 |
| nenanullene (aq) | <0.00 mc | 0022 ΠΝΠ/Ծ / | <0.000022 | # | ~0.000022 # # | ~u.uuuu∠z # | ~u.uuuu22 # | <u><u></u>~0.000022</u> |
| Fluorene (aq) | <0.00 | 0014 TM178 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 |
| | mg | J/I | 0.000015 | # | # # | # | # | |
| Chrysene (aq) | <0.00 mr | 0013 TM178 | <0.000013 | <0.000013 | <0.000013 # # | <0.000013 # | <0.000013 # | <0.000013 |
| yrene (aq) | <0.00 | , 0015 TM178 | <0.000015 | <0.000015 | <0.000015 | * <0.000015 | <0.000015 | <0.000015 |
| | mg | j/l | | # | # # | # | # | |
| enzo(a)anthracene (aq) | <0.00 | 0017 TM178 | <0.000017 | <0.000017 | <0.000017 # | <0.000017 | <0.000017 | <0.000017 |
| enzo(b)fluoranthene (ac |) <0.00 | 0023 TM178 | <0.000023 | * <0.000023 | # # <0.000023 | # <0.000023 | <0.00023 | <0.000023 |
| | " | ı/I | | # | # # | # | # | |
| enzo(k)fluoranthene (ac |) <0.00 | 0027 TM178 | <0.000027 | <0.000027 | <0.000027 | <0.000027 | <0.000027 | <0.000027 |
| enzo(a)pyrene (ag) | mg <0.00 | 0009 TM178 | <0 00000 | # <0.00000 | # # <0.00000 | # <0.00000 | # <0.00000 | <0 00000 |
| | ~0.00 mg | j/l | -v.v0000ð | # | ## | -0.00005 | # | \$0.000003 |
| Dibenzo(a,h)anthracene | aq) <0.00 | 0016 TM178 | <0.000016 | <0.000016 | <0.000016 | <0.000016 | <0.000016 | <0.000016 |
| lonzo(a h i)non-long () | mg | 0016 TM479 | ~0.000.40 | # | # # | # | # | <0.000046 |
| enzo(g,n,i)perviene (aq) | <0.00 mc | ούτο ΠΜΠ78 / | <0.000016 | <0.000016 | <0.000016 # # | <0.000016 # | ∿u.uuuu16 # | <0.000016 |
| ndeno(1,2,3-cd)pyrene (| aq) <0.00 | 0014 TM178 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 |
| | mg | I/I | 0.000001 | # | # # | # | # | 0.0000111 |
| 'AH, Total Detected USE aα) | :PA 16 <0.00 | U344 TM178 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 |
| iq) | | μ1 | | | | | | |
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|---|------------------------------|----------------------|--------------------------------------|----------------|---|---|----------|---|----------------------|--|
| SDG: 16091' Job: H_SLF Client Reference: 405.00 | 1-7 R_EDH-58 481 00033 | | Location: Customer: Attention: | Va SL Za | lleyfields R Consulting Ltd k Ritchie | | | Order Number: Report Number Superseded Re | 405/8599 : 378274 | |
| | | | Automation | 20 | | | | - apoiloouou ito | | |
| Results Legend | 5 (VV) | Customer Sample Ref. | VF12 | | VF3D | | | | | |
| # ISO17025 accredited. M mCERTS accredited. | | | | | | | | | | |
| aq Aqueous / settled sample. | | Depth (m) | | | | | | | | |
| tot.unfilt Total / unfiltered sample. | | Sample Type | Water(GW/SW) | | Water(GW/SW) | | | | | |
| ** % recovery of the surrogate standa | ard to | Sample Time | | | | | | | | |
| check the efficiency of the method results of individual compounds w | . The ithin | Date Received | 09/09/2016 | | 09/09/2016 | | | | | |
| samples aren't corrected for the re (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 14132058 | | 14132046 | | | | | |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | | | | |
| Nanhthalene (ag) | <0.00 | nits Method | <0.0001 | | <0.0001 | - | | | | |
| Acenanhthene (ag) | -0.000 mg/l | 015 TM178 | <0.0001 | # | <0.0001 | # | | | | |
| | mg/l | 011 TM178 | <0.000010 | # | <0.000010 | # | | | | |
| | <0.000 mg/l | 017 TM170 | <0.000017 | # | 0.000011 | # | | | | |
| Fluorantnene (aq) | <0.000 mg/l | | <0.000017 | # | 0.000028 | # | | | | |
| Anthracene (aq) | <0.000 mg/l | 015 IM178 | <0.000015 | # | <0.000015 | # | | | | |
| Phenanthrene (aq) | <0.000 mg/l | 022 IM178 | <0.000022 | # | 0.000074 | # | | | | |
| Fluorene (aq) | <0.000 mg/l | 014 TM178 | <0.000014 | # | 0.000028 | # | | | | |
| Chrysene (aq) | <0.000 mg/l | 013 TM178 | <0.000013 | # | <0.000013 | # | | | | |
| Pyrene (aq) | <0.000 mg/l | 015 TM178 | <0.000015 | # | 0.000044 | # | | | | |
| Benzo(a)anthracene (aq) | <0.000 mg/l | 017 TM178 | <0.000017 | # | 0.000019 | # | | | | |
| Benzo(b)fluoranthene (aq) | <0.000 mg/l | 023 TM178 | <0.000023 | # | <0.000023 | # | | | | |
| Benzo(k)fluoranthene (aq) | <0.000 mg/l | 027 TM178 | <0.000027 | # | <0.000027 | # | | | | |
| Benzo(a)pyrene (aq) | <0.000 mg/l | 009 TM178 | <0.00009 | # | <0.00009 | # | | | | |
| Dibenzo(a,h)anthracene (aq) | <0.000 mg/l | 016 TM178 | <0.000016 | # | <0.000016 | # | | | | |
| Benzo(g,h,i)perylene (aq) | <0.000 mg/l | 016 TM178 | <0.000016 | # | <0.000016 | # | | | | |
| Indeno(1,2,3-cd)pyrene (aq) | <0.000 mg/l | 014 TM178 | <0.000014 | # | <0.000014 | # | | | | |
| PAH, Total Detected USEPA 16 (aq) | <0.000 mg/l | 344 TM178 | <0.000344 | | <0.000344 | | | | | |
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CERTIFICATE OF ANALYSIS

Validated

SDG: 160911-7 Location: Valleyfields Order Number: 405/8599 H_SLR_EDH-58 378274 Job: Customer: SLR Consulting Ltd Report Number: **Client Reference:** 405.00481.00033 Attention: Zak Ritchie Superseded Report:

Table of Results - Appendix

| Method No | Reference | Description | Wet/Dry Sample ¹ | Surrogate Corrected |
|-----------|---|---|--------------------------------|------------------------|
| TM104 | Method 4500F, AWWA/APHA, 20th Ed., 1999 | Determination of Fluoride using the Kone Analyser | | |
| TM120 | Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970 | Determination of Electrical Conductivity using a Conductivity Meter | | |
| TM152 | Method 3125B, AWWA/APHA, 20th Ed., 1999 | Analysis of Aqueous Samples by ICP-MS | | |
| TM178 | Modified: US EPA Method 8100 | Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters | | |
| TM183 | BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3 | Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry | | |
| TM184 | EPA Methods 325.1 & 325.2, | The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers | | |
| TM228 | US EPA Method 6010B | Determination of Major Cations in Water by iCap 6500 Duo ICP-OES | | |
| TM256 | The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4. | Determination of pH in Water and Leachate using the GLpH pH Meter | | |

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

Validated

| SDG: | 160911-7 | Location: | Valleyfields | Order Number: | 405/8599 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 378274 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Test Completion Dates

| Lab Sample No(s) | 14132054 | 14132053 | 14132055 | 14132052 | 14132051 | 14132049 | 14132050 | 14132048 | 14132056 | 14132059 |
|---|---|---|---|---|------------------|-------------|-------------|-------------|-------------|-------------|
| Customer Sample Ref. | ES1 | ES2 | TD | VF1 | VF4 | VF5 | VF6 | VF7 | VF8 | VF9 |
| AGS Ref. | | | | | | | | | | |
| Depth | | | | | | | | | | |
| Туре | SALINE_D | SALINE_D | LIQUID | LIQUID | LIQUID | LIQUID | LIQUID | LIQUID | LIQUID | LIQUID |
| Anions by Kone (w) | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 |
| Conductivity (at 20 deg.C) | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 | 13-Sep-2016 |
| Dissolved Metals by ICP-MS | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 |
| Fluoride | 13-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 |
| Mercury Dissolved | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 | 16-Sep-2016 |
| Metals by iCap-OES Dissolved (W) | 14-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 |
| PAH Spec MS - Aqueous (W) | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 | 16-Sep-2016 | 15-Sep-2016 | 16-Sep-2016 | 15-Sep-2016 | 15-Sep-2016 |
| pH Value | 13-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 | 14-Sep-2016 |
| | | | | | | | | | | |
| Lab Sample No(s) | 14132047 | 14132057 | 14132058 | 14132046 | | | | | | · |
| Lab Sample No(s) Customer Sample Ref. | 14132047 VF10 | 14132057 VF11 | 14132058 VF12 | 14132046 VF3D | | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. | 14132047 VF10 | 14132057 VF11 | 14132058 VF12 | 14132046 VF3D | | | · | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth | 14132047 VF10 | 14132057 VF11 | 14132058 VF12 | 14132046 VF3D | | | · | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type | 14132047 VF10 LIQUID | 14132057 VF11 | 14132058 VF12 | 14132046 VF3D LIQUID | | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) | 14132047 VF10 LIQUID 13-Sep-2016 | 14132057 VF11 LIQUID 13-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 | | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) Conductivity (at 20 deg.C) | 14132047 VF10 LIQUID 13-Sep-2016 13-Sep-2016 | 14132057 VF11 LIQUID 13-Sep-2016 13-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 13-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 13-Sep-2016 | * - - - | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) Conductivity (at 20 deg.C) Dissolved Metals by ICP-MS | 14132047 VF10 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 | 14132057 VE11 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 | * - - - | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) Conductivity (at 20 deg.C) Dissolved Metals by ICP-MS Fluoride | 14132047 VF10 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 | 14132057 VF11 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 | * | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) Conductivity (at 20 deg.C) Dissolved Metals by ICP-MS Fluoride Mercury Dissolved | 14132047 VF10 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 | 14132057 VF11 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 16-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 | | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) Conductivity (at 20 deg.C) Dissolved Metals by ICP-MS Fluoride Mercury Dissolved Metals by iCap-OES Dissolved (W) | 14132047 VF10 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 16-Sep-2016 | 14132057 VF11 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 15-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 16-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 16-Sep-2016 14-Sep-2016 | | | | | | |
| Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type Anions by Kone (w) Conductivity (at 20 deg.C) Dissolved Metals by ICP-MS Fluoride Mercury Dissolved Metals by iCap-OES Dissolved (W) PAH Spec MS - Aqueous (W) | 14132047 VF10 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 16-Sep-2016 15-Sep-2016 16-Sep-2016 | 14132057 VF11 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 15-Sep-2016 15-Sep-2016 | 14132058 VF12 LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 16-Sep-2016 15-Sep-2016 15-Sep-2016 | 14132046 VF3D LIQUID 13-Sep-2016 13-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 14-Sep-2016 | | | | | | |

| SDG: | 160911-7 | Location: | Valleyfields | Order Number: | 405/8599 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 378274 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Appendix

ALcontrol Laboratories

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 20. For the BSEN 12457-3 two batch process to allow the cumulative release to be for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, and Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol)

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17 Stones/debris are not routinely removed. We always endeavour to take а representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

| 1 | Container with Headspace provided for volatiles analysis |
|---|--|
| 2 | Incorrect container received |
| 3 | Deviation from method |
| 4 | Holding time exceeded before sample received |
| 5 | Samples exceeded holding time before presevation was performed |
| § | Sampled on date not provided |
| • | Sample holding time exceeded in laboratory |
| 0 | Sample holding time exceeded due to sampled on date |
| & | Sample Holding Time exceeded - Late arrival of instructions. |
| | |

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised liaht microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

| Asbe stos Type | CommonName |
|---------------------------|-----------------|
| Chrysof le | White Asbestos |
| Amosite | Brow n Asbestos |
| Cro d dolite | Blue Asbe stos |
| Fibrous Actinolite | - |
| Fib to us Anthop hyll ite | - |
| Fibrous Tremol ite | - |

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



SLR Consulting Ltd Floor 2 4/5 Lochside View Edinburgh Park Edinburgh Lanarkshire EH12 9DH

Attention: Zak Ritchie

CERTIFICATE OF ANALYSIS

Date: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: 27 September 2016 H_SLR_EDH 160923-99 405.00481.00033 Valleyfields 379884

We received 1 sample on Thursday September 22, 2016 and 1 of these samples were scheduled for analysis which was completed on Tuesday September 27, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:

Sonia McWhan Operations Manager



Alcontrol Laboratories is a trading division of ALcontrol UK Limited Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

| ALcontrol | Laboratories | CEF | RTIFICATE OF AN | ALYSIS | | | Validated | | | |
|---------------------------|---|----------------------|--------------------|----------|--------------------------------------|----------|--------------|--|--|--|
| SDG: | 160923-99 | Location: | Valleyfields | | Order Number: | 405/8629 | | | | |
| Job: Client Reference: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | | Report Number: Superseded Report: | 379884 | | | | |
| | Client Reference: 405.00481.00033 Attention: Zak Ritchie Superseded Report: Received Sample Overview | | | | | | | | | |
| Lab Sample No(| (S) | Customer Sample Ref. | - | AGS Ref. | Depth (m |) | Sampled Date | | | |
| 14204544 | | VF8 | | | | | 21/09/2016 | | | |

Only received samples which have had analysis scheduled will be shown on the following pages.

| ALcontrol L | aboratori | es | _ | | | | | ١ | /alidated |
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| CERTIFICATE OF ANALYSIS | | | | | | | | | |
| SDG: Job: Client Reference: | 160923-99 H_SLR_EDH- 405.00481.000 | 58)33 | Location: Customer Attention: | r: : | Valleyfields SLR Consulting Ltd Zak Ritchie | Order Number: Report Number: Superseded Report: | 405/8629 379884 | | |
| LIQUID | | | | 14 | | | | | |
| Results Legend | | Lab Sample N | lo(s) | 204544 | | | | | |
| No Determina Possible | ation | Custome Sample Refer | ence | VF8 | | | | | |
| | | AGS Refere | nce | | | | | | |
| | | Depth (m) |) | | | | | | |
| | | Containe | | HNO3 Filtered (ALE204) | | | | | |
| Dissolved Metals by ICP-MS | | All | NDPs: 0 Tests: 1 | x | | | | | |

| | Laboratori | les | CE | RTIFICATE OF | ANALYSIS | | | Validated |
|---|---|---|---|---|----------|---|-------------------------------|-----------|
| SDG: Job: Client Reference: | 160923-99 H_SLR_EDH- 405.00481.000 | 58 033 | Location: Customer: Attention: | Valleyfields SLR Consulting Ltd Zak Ritchie | | Order Number: Report Number: Superseded Rep | 405/8629 : 379884 port: | |
| Results Lo # ISO17025 accredited. m CERTS accredited. A queueus / settled sa stiss.filt Dissolved / filtered sa Subcontracted test. * % recovery of the su check the efficiency results of individual samples aren't corre (F) Trigger breach confi 5&3§@ Sample deviation (se | gend mple. ample. pipe. rrogate standard to of the method. The compounds within cted for the recovery med es appendix) | Customer Sample R Depth (Sample Ty Date Sample Sample Tin Date Receiv SOG R Lab Sample No. AGS Referen | ef. VF8 m) pe Water(GW/SW) ed 21/09/2016 ed 22/09/2016 lef 160923-99 (s) 14204544 CE | | | | | |
| pron (diss.filt) | <0.0 | DO5 mg/l TM152 | <0.0179 | | | | | |
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| ALcontrol I | Laboratories | | | | | Validated |
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| | | CER | RTIFICATE OF ANA | LYSIS | | |
| SDG: | 160923-99 | Location: | Valleyfields | Order Number: | 405/8629 | |
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 379884 | |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | | |
| | | | | | | |

Table of Results - Appendix

| Method No | Reference | Description | Wet/Dry Sample ¹ | Surrogate Corrected |
|-----------|---|---------------------------------------|--------------------------------|------------------------|
| TM152 | Method 3125B, AWWA/APHA, 20th Ed., 1999 | Analysis of Aqueous Samples by ICP-MS | | |

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

| ALcontrol | Laboratories |
|-----------|--------------|
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CERTIFICATE OF ANALYSIS

Validated

| SDG: | 160923-99 | Location: | Valleyfields | Order Number: | 405/8629 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 379884 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Dile No(s) 14204544

| Lab Sample No(s) | 14204544 |
|----------------------------|-------------|
| Customer Sample Ref. | VF8 |
| AGS Ref. | |
| Depth | |
| Туре | LIQUID |
| Dissolved Metals by ICP-MS | 27-Sep-2016 |

Test Completion Dates

| SDG: | 160923-99 | Location: | Valleyfields | Order Number: | 405/8629 |
|-------------------|-----------------|------------|--------------------|--------------------|----------|
| Job: | H_SLR_EDH-58 | Customer: | SLR Consulting Ltd | Report Number: | 379884 |
| Client Reference: | 405.00481.00033 | Attention: | Zak Ritchie | Superseded Report: | |

Appendix

ALcontrol Laboratories

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 20. For the BSEN 12457-3 two batch process to allow the cumulative release to be for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, and Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol)

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17 Stones/debris are not routinely removed. We always endeavour to take а representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

| 1 | Container with Headspace provided for volatiles analysis |
|---|--|
| 2 | Incorrect container received |
| 3 | Deviation from method |
| 4 | Holding time exceeded before sample received |
| 5 | Samples exceeded holding time before presevation was performed |
| § | Sampled on date not provided |
| • | Sample holding time exceeded in laboratory |
| @ | Sample holding time exceeded due to sampled on date |
| & | Sample Holding Time exceeded - Late arrival of instructions. |
| | |

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised liaht microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

| Asbe stos Type | Common Name |
|---------------------------|-----------------|
| Chrysof le | White Asbestos |
| Amosite | Brow n Asbestos |
| Cro a dolite | Blue Asbe stos |
| Fibrous Actinolite | - |
| Fib to us Anthop hyll ite | - |
| Fibrous Tremol ite | - |

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



SLR Consulting Ltd Floor 2 4/5 Lochside View Edinburgh Park Edinburgh Lanarkshire EH12 9DH

Attention: Adrian Cowe

Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US Tel: (01244) 528700 Fax: (01244) 528701 email: customerservices@alcontrol.com Website: www.alsenviromental.co.uk

CERTIFICATE OF ANALYSIS

Date: Customer: Sample Delivery Group (SDG): Your Reference: Location: Report No: 13 December 2016 H_SLR_EDH 161203-86 405.00481.00033.01 Valleyfield 390094

We received 14 samples on Friday December 02, 2016 and 14 of these samples were scheduled for analysis which was completed on Tuesday December 13, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan Operations Manager



ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

| | | | | | | Validated |
|-----------|-------------|-------------------|--------------------|--------------------|--------|-----------|
| | | CERTIFICATE C | OF ANALYSIS | | | |
| SDG: | 161203-86 | Client Reference: | 405.00481.00033.01 | Report Number: | 390094 | |
| Location: | Valleyfield | Order Number: | 405/8729 | Superseded Report: | | |

Received Sample Overview

| Lab Sample No(s) | Customer Sample Ref. | AGS Ref. | Depth (m) | Sampled Date |
|------------------|----------------------|----------|-----------|--------------|
| 14643494 | ES1 | | | 29/11/2016 |
| 14643495 | ES2 | | | 29/11/2016 |
| 14643496 | TD | | | 29/11/2016 |
| 14643497 | VF1 | | | 29/11/2016 |
| 14643502 | VF4 | | | 30/11/2016 |
| 14643503 | VF5 | | | 30/11/2016 |
| 14643504 | VF6 | | | 30/11/2016 |
| 14643498 | VF7 | | | 29/11/2016 |
| 14643505 | VF8 | | | 30/11/2016 |
| 14643499 | VF9 | | | 29/11/2016 |
| 14643500 | VF10 | | | 29/11/2016 |
| 14643506 | VF11 | | | 30/11/2016 |
| 14643507 | VF12 | | | 30/11/2016 |
| 14643501 | VF3D | | | 30/11/2016 |

Only received samples which have had analysis scheduled will be shown on the following pages.

| | | ~ | | · - · · · | -1/ | ~ • | - - | ~ | | | | /O' | | | | | | | | | | | | | Γ | | Val | idated | | | |
|----------------------------------|------------------|----------------------|----------|----------------------|-----------|------------|----------------|--------------------|-------------------|----------|--------------------|----------------|--------------|----------------|----------|--------------------|-----------|------------------|----------------|----------------|-------------------|-----------|---------------------|------------------|----------|-------------------|----------------|--------|--|-----|--|
| SDG: | 161203-86 | С | ER | ient | -IC Re | JA fere | IE nce: | | - A 405 | .004 | 4L) 481. | 000 | 33.0 |)1 | | R | ерс | rt N | umt | ber: | | | 39(|)09 ² | 4 | | | | | | |
| (ALS) Location: | Valleyfield | | 0 | rder | Nu | mbe | er: | | 405 | /87 | 29 | | | | | S | upe | rse | ded | Rep | ort | : | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Lah Sample No(s) | | | Lab Cample Na(a) | | | | 146 | 146 | | | | 146 | 146 | | 146 | | | | 146 | 14 | | 146 146 | | 146 | 140 | | 146 | | 146 | |
| Results Legend | | D(S) | | | 4349 | | 4349 | | 0 | 4349 | | 4349 | | 4350 | | | 4350 | | 4300 | 1000 | | 4349 | | 4000 | 1350 | | 4349 | | | | |
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| No Determination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Customer | | | | _ | | | | | | | | | | | | _ | | | _ | | _ | | | _ | | _ | | | | |
| | Sample Refere | nce | | | S1 | | S2 | | č | 3 | | /F1 | | /+4 | ! | | /F5 | | 140 | j | | IF7 | | 10 | ורא | | /F9 | | | | |
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| | AGS Referen | се | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | Depth (m) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 0.5l gl | Disso | DIC.0 | 500m | HNO | 0.51 gl | Disso | 0.51 gl | 500m | HNO | 0 500m | Disso | 0.5l gl | 500m | HNO | 0.51 nl | Disso | 0.5l gl | Disso 500m | HNOS | 500m | Disso | 0.51 gl | 500m | HNOS | | | | |
| | Containor | | ass bo | Ived M | 3 Filtere | n Plasti | 3 Filtere | ass bo | Ived M | ass bo | Ived M | 3 Filtere | nl Plasti | Ved M | ass bo | Ived M | 3 Filtere | nl Plasti | Ived M | ass bo | Ived M | 3 Filtere | nl Plasti ass bo | Ived M | ass bo | Ived Ivi | Filtere | | | | |
| | Container | | ttle (AL | etals P | me (ALE | c (ALE | etals P | c (ALE ttle (AL | etals P | ttle (AL | etals P c (ALE |)d (ALE | c (ALE | etals P | tlie (AL | etals P c (Al F |)d (ALE | c (ALE ⊪⊳ (AI | etals P | tile (AL | etals P c (ALE |)d (ALE | c (ALE | etals P | ttle (AL | etals r c (ALE |)d (ALE | | | | |
| | | | E227 | reser | E221 | 208) | E204) reser | 208) E227 | reser | E227 | reser 208) | 204) | 208) E337 | :204) reser | E227 | reser 2081 | 204) | 208) E227 | :204) reser | E227 | reser 208) | 204) | 208) F227 | reser | E227 | reser 208) | 204) | | | | |
| Anions by Kone (w) | All | NDPs: 0 Tests: 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10000.11 | | x | | x | |) | (| | x | | x | | | x | | x | | | x | | x | | | x | | | | | |
| Conductivity (at 20 deg.C) | All | NDPs: 0 Tests: 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10000.14 | | x | | x | |) | (| | x | | x | | | x | | x | | | x | | x | | | x | | | | | |
| Dissolved Metals by ICP-MS | All | NDPs: 0 Tests: 1/ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10000.14 | | | x | | X | | | x | | x | | × | | | x | |) | (| | x | | 2 | × | | X | | | | |
| Fluoride | All | NDPs: 0 Tests: 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10000.14 | | x | | x | |) | (| | x | | x | | | x | | x | | | x | | x | | | x | | | | | |
| Mercury Dissolved | All | NDPs: 0 Tests: 1/ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 163(3. 14 | | x | | | x | | x | | × | <mark>۲</mark> | | x | | X | | | x | | X | : | | x | | 7 | <mark>د</mark> | | | | |
| Metals by iCap-OES Dissolved (W) | All | NDPs: 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 16515. 14 | | | x | | X | | | x | | x | | × | <u>د</u> | | x | |) | <mark>د</mark> | | x | | 2 | × | | x | | | | |
| PAH Spec MS - Aqueous (W) | All | NDPs: 0 | | | | | | | | | | | | | | | | | | | | | | Ħ | | Ħ | | | | | |
| | | rests: 14 | x | |) | ĸ | | x | | x | | | x | | x | | | x | | x | | | x | | x | | | | | | |
| pH Value | All | NDPs: 0 | | | | | + | | | | | | | | | | Ħ | | $ \uparrow $ | | + | | 1 | Ħ | | Ħ | \top | | | | |
| | | i ests: 14 | | x | | x | | > | < l | | x | | x | | | x | | x | | | x | | X | | | x | | | | | |

| SDG: |
|-----------|
| Location: |
| |

| ALS SDG: Location: | Valleyfield | | 0 | orde | nt Ro er No | eter umb | ence ber: | ə: | 40 |)5.U)5/8 | 040 8729 | 9 9 | JUU. | Superseded Report: | 390094 |
|----------------------------------|---------------------------|----------------------|---------------------------|------------------------|------------------------|----------------------------|-------------------------|---|------------------------|------------------------|---------------------------|-------------------------|------------------------|--------------------|--------|
| LIQUID | | | | | 14 | | Ŧ | - | | 14. | | | 14 | | |
| Results Legend | Lab Sample No | o(s) | | | 6435 | | 0400 | 6405 | | 6435 | | | 6435 | | |
| X Test | | | | | 8 | | 0 | กี | | 70 | | | 01 | | |
| No Determination Possible | Customer Sample Refere | nce | | | VF10 | | Ч | 11244 | | VF12 | | | VF3D | | |
| | AGS Referen | се | | | | | | | | | | | | | |
| | Depth (m) | | | | | | | | | | | | | | |
| | Container | | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE208) | Dissolved Metals Preser | 0.5l glass bottle (ALE227 | 500ml Plastic (ALE208) | HNO3 Filtered (ALE204) | 0.5l glass bottle (ALE227 | Dissolved Metals Preser | HNO3 Filtered (ALE204) | | |
| Anions by Kone (w) | All | NDPs: 0 Tests: 14 | | x | |) | C | | X | | | × | | | |
| Conductivity (at 20 deg.C) | All | NDPs: 0 Tests: 14 | _ | x | | , | C | | X | | 2 | × | | | |
| Dissolved Metals by ICP-MS | All | NDPs: 0 Tests: 14 | | | x | |) | Contraction 1 and the second secon | | x | | | x | | |
| Fluoride | All | NDPs: 0 Tests: 14 | | x | |) | C | | x | | 2 | x | | | |
| Mercury Dissolved | All | NDPs: 0 Tests: 14 | |) | K | | x | |) | <mark>(</mark> | | x | | | |
| Metals by iCap-OES Dissolved (W) | All | NDPs: 0 Tests: 14 | | | x | |) | <mark><</mark> | | x | | | x | | |
| PAH Spec MS - Aqueous (W) | All | NDPs: 0 Tests: 14 | x | | | x | | x | | | x | | | | |
| pH Value | All | NDPs: 0 Tests: 14 | | x | | > | <mark>(</mark> | | x | | 2 | × | | | |

| Results Legend | | Customer Sample Ref | EQ1 | EC) | TD | VE1 | VEA | VEE |
|---|-----------------|----------------------|---------------|-------------------------|---------------|---------------|--------------|---------------|
| # ISO17025 accredited. M mCERTS accredited | | oustomer oumple rei. | ESI | E02 | ID | VFI | VF4 | VF5 |
| aq Aqueous / settled sample. | | Depth (m) | | | | | | |
| diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. | | Sample Type | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) |
| * Subcontracted test. ** % recovery of the surrogate standa | rd to | Date Sampled | 29/11/2016 | 29/11/2016 | 29/11/2016 | 29/11/2016 | 30/11/2016 | 30/11/2016 |
| check the efficiency of the method. | The | Date Received | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 |
| results of individual compounds wi samples aren't corrected for the rec | thin covery | SDG Ref | 161203-86 | 161203-86 | 161203-86 | 161203-86 | 161203-86 | 161203-86 |
| (F) Trigger breach confirmed 1-5&+s∕@ Sample deviation (see appendix) | | Lab Sample No.(s) | 14643494 | 14643495 | 14643496 | 14643497 | 14643502 | 14643503 |
| Component | LOD/Un | its Method | | | | | | |
| Fluoride | <0.5 m | g/l TM104 | 0.894 | 0.829 | <0.5 | <0.5 | 0.543 | <0.5 |
| | | | # | # | # | # | # | # |
| Conductivity @ 20 deg.C | <0.00 | 5 TM120 | 33.4 | 30.8 | 22.1 | 20 | 25.1 | 21.9 |
| | mS/cm | 1 | # | # | # | # | # | # |
| Aluminium (diss.filt) | <0.002 r | ng/l TM152 | <0.022 | 0.00822 | 0.0727 | <0.002 | <0.002 | 0.00568 |
| | | | # | # | # | # | # | # |
| Antimony (diss.filt) | <0.000 | 16 TM152 | <0.00176 | 0.000172 | 0.00129 | 0.000172 | <0.00016 | <0.00016 |
| | mg/i | T1450 | # | # | # | # | # | # |
| Arsenic (diss.filt) | <0.000 | 51 IM152 | 0.00626 | 0.00185 | 0.00625 | 0.00116 | 0.00143 | 0.00106 |
| Poron (dian filt) | | mg// TM152 | 2 2 2 2 | # | 9.74 | 0 529 | # 61 | 2.02 |
| Boron (diss.int) | <0.005 I | ng/i nviroz | 3.33 # | 2.42 # | 0.74 # | 0.320 | 0.1 # | 2.23 |
| Cadmium (diss filt) | <0 000 | 08 TM152 | # <0.00088 | # <0.000.05 | # 0.000171 | # <0.00008 | # <0.0008 | # <0 0000 |
| | -0.0000 ma/l | | -0.00000 # | -0.00000 # | ± | -0.00000 # | -0.00000 # | -0.00000 # |
| Chromium (diss.filt) | <0 001 | 2 TM152 | <0.0132 | ۳ <0.0012 | <0.0012 | <0.0012 | | <0.0012 |
| | ma/l | | # | -0.0012 # | # | -0.0012 | # | # |
| Copper (diss.filt) | <0.0008 | 85 TM152 | <0.00935 | <0.00085 | <0.00085 | <0.00085 | <0.00085 | <0.00085 |
| | mg/l | | # | # | # | # | # | # |
| Manganese (diss.filt) | <0.000 | 76 TM152 | 0.027 | 0.00736 | 0.12 | 0.172 | 0.0474 | 0.0523 |
| C () | mg/l | | # | # | # | # | # | # |
| Molybdenum (diss.filt) | <0.000 | 62 TM152 | 0.0373 | 0.0274 | 0.648 | 0.00599 | 0.218 | 0.000733 |
| | mg/l | | # | # | # | # | # | # |
| Nickel (diss.filt) | <0.0004 | 44 TM152 | <0.00484 | 0.000631 | <0.00044 | <0.00044 | 0.000579 | <0.00044 |
| | mg/l | | # | # | # | # | # | # |
| Selenium (diss.filt) | <0.0008 | B1 TM152 | <0.00891 | <0.00081 | 0.00144 | <0.00081 | 0.002 | 0.00162 |
| | mg/l | | # | # | # | # | # | # |
| Vanadium (diss.filt) | <0.001 | 3 TM152 | <0.0143 | 0.00149 | 0.0403 | <0.0013 | <0.0013 | 0.00462 |
| | mg/l | | # | # | # | # | # | # |
| Zinc (diss.filt) | <0.001 | 3 TM152 | <0.0143 | <0.0013 | <0.0013 | <0.0013 | <0.0013 | <0.0013 |
| | mg/l | | # | # | # | # | # | # |
| Mercury (diss.filt) | <0.0000 | D1 TM183 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Outebate | mg/i | | # | # | # | # | # | # |
| Sulphate | <2 mg | // 11/1184 | 2390 # | 2270 # | 1630 | 817 # | 1570 " | 212 # |
| Chlorido | <2 mg | // TM18/ | 17000 | # | 10000 | 10500 | 10000 | 10100 |
| Chionde | ~z mg | /1 11/1104 | # | 10500 # | 10900 # | 10500 # | 10300 # | 10100 # |
| Calcium (diss filt) | <0.012 r | mg/I TM228 | 387 | 361 | π 1080 | | # | 399 |
| | -0.0121 | 19/1 11/1220 | 507 # | # | # | 000 # | # | # |
| Sodium (diss.filt) | <0.076 r | na/l TM228 | 9570 | 8390 | 5510 | 4990 | 5990 | 4730 |
| , , , , , , , , , , , , , , , , , , , | | Ŭ | # | # | # | # | # | # |
| Magnesium (diss.filt) | <0.036 r | ng/l TM228 | 1110 | 1070 | 265 | 560 | 528 | 486 |
| | | - | # | # | # | # | # | # |
| Potassium (diss.filt) | <1 mg | /I TM228 | 433 | 390 | 290 | 175 | 270 | 217 |
| | | | # | # | # | # | # | # |
| рН | <1 pH U | nits TM256 | 7.81 | 7.82 | 8.21 | 7.88 | 7.86 | 8 |
| | | | # | # | # | # | # | # |
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| Results Legend | | Customer Sample Ref. | VF6 | VF7 | VF8 | VF9 | VF10 | VF11 |
|---|----------------|----------------------|-------------------------|-------------------------|-------------------------|--------------|-------------------------|-------------------------|
| # ISO17025 accredited. M mCERTS accredited. | | | | | | | | |
| aq Aqueous / settled sample. | | Depth (m) | | | | | | |
| diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. | | Sample Type | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) |
| * Subcontracted test. | | Date Sampled | 30/11/2016 | 29/11/2016 | 30/11/2016 | 29/11/2016 | 29/11/2016 | 30/11/2016 |
| ** % recovery of the surrogate standa check the efficiency of the method. | rd to The | Sample Time | | | | | | |
| results of individual compounds wi | thin | Date Received | 02/12/2016 161203-86 | 02/12/2016 161203-86 | 02/12/2016 161203-86 | 161203-86 | 02/12/2016 161203-86 | 02/12/2016 161203-86 |
| samples aren't corrected for the rec (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 14643504 | 14643498 | 14643505 | 14643499 | 14643500 | 14643506 |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | | | |
| Component | LOD/Un | its Method | | | | | | |
| Fluoride | <0.5 m | g/I TM104 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| | | | # | # | # | # | # | # |
| Conductivity @ 20 deg.C | <0.00 | 5 TM120 | 13.4 | 17.1 | 23.1 | 22.5 | 14 | 1.76 |
| | mS/cm | 1 I | # | # | # | # | # | # |
| Aluminium (diss filt) | <0 002 r | ng/l TM152 | 0 163 | 0 00294 | <0.002 | 0 00501 | <0.002 | <0.002 |
| | | | # | # | # | # | # | # |
| Antimony (diss filt) | <0.000 | 16 TM152 | 0.000370 | <0.00016 | ~0.00016 | <0.00016 | <0.00016 | <0.00016 |
| | -0.000 ma/l | 10 1101102 | 0.000070 # | 40.00010 # | 40.00010 # | 40.00010 | 40.00010 | -0.00010 # |
| A | 111g/1 | T1450 | # | # | # | # | # | # |
| Arsenic (diss.filt) | <0.000 | 51 IM152 | 0.0246 | 0.00143 | 0.000881 | 0.00217 | 0.00182 | <0.00051 |
| | mg/l | | # | # | # | # | # | # |
| Boron (diss.filt) | <0.005 r | ng/l TM152 | 8.73 | 0.424 | 3.85 | 0.785 | 7.46 | 0.293 |
| | | | # | # | # | # | # | # |
| Cadmium (diss.filt) | <0.000 | 08 TM152 | 0.000083 | <0.0008 | <0.0008 | <0.0008 | <0.0008 | <0.0008 |
| | mg/l | | # | # | # | # | # | # |
| Chromium (diss.filt) | < 0.001 | 2 TM152 | <0.0012 | <0.0012 | <0.0012 | <0.0012 | <0.0012 | <0.0012 |
| ¥ 7 | ma/l | | # | # | # | # | - # | # |
| Conner (diss filt) | <0.000 | 85 TM152 | π <0 00085 | π <0 00085 | <0 00085 | | | <በ በበበጸ5 |
| | ~0.000 ma/l | | ~0.00000 # | ~0.00000 # | ~0.00000 # | ~0.00000 # | ~0.00000 # | ~0.00003 # |
| Manganaga (-1: fill) | -0.000 | 76 TM450 | # | 0.005 | # | # | # | # |
| iviariganese (diss.filt) | <0.000 | /o IM152 | 0.0597 | 0.285 | 0.0417 | 0.427 | 0.243 | 0.0023 |
| | mg/i | | # | # | # | # | # | # |
| Molybdenum (diss.filt) | <0.000 | 62 TM152 | 0.458 | 0.0113 | 0.107 | 0.0405 | 0.262 | <0.00062 |
| | mg/l | | # | # | # | # | # | # |
| Nickel (diss.filt) | <0.000 | 44 TM152 | 0.000467 | 0.000684 | 0.000867 | 0.000906 | 0.000624 | <0.00044 |
| | mg/l | | # | # | # | # | # | # |
| Selenium (diss.filt) | <0.000 | 81 TM152 | <0.00081 | <0.00081 | 0.00104 | <0.00081 | <0.00081 | <0.00081 |
| | ma/l | | # | # | # | # | # | # |
| Vanadium (diss filt) | <0.001 | 3 TM152 | | د0 0013 | | 0.00248 | د0 ۵۵۱۵ | <0.0013 |
| vanauum (uiss.iiit) | -0.001 ma/l | 5 1101152 | 0.00550 # | <0.0010 # | <0.0010 # | 0.00240 | <0.0015 # | <0.0013 # |
| Zine (dies filt) | <0.001 | 2 TM150 | π <0.0012 | π -0.0012 | π -0.0012 | π -0.0012 | π <0.0012 | π |
| Zinc (diss.iiit) | <0.001 | 3 1101152 | ×0.0013 ۳ | ×0.0015 ۳ | ×0.0015 ۳ | ×0.0013 ۳ | ×0.0013 بر | 0.00243 |
| | mg/i | | # | # | # | # | # | # |
| Mercury (diss.filt) | <0.000 | D1 TM183 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| | mg/l | | # | # | # | # | # | # |
| Sulphate | <2 mg | ı/I TM184 | 722 | 483 | 1350 | 763 | 601 | 24.8 |
| | | | # | # | # | # | # | # |
| Chloride | <2 mg | /I TM184 | 6190 | 8730 | 9610 | 11800 | 6370 | 377 |
| | | | # | # | # | # | # | # |
| Calcium (diss.filt) | <0.012 r | na/l TM228 | 1070 | 862 | 490 | 1150 | 494 | 111 |
| , , , , , , , , , , , , , , , , , , , | | ° | # | # | # | # | # | # |
| Sodium (diss filt) | <0 076 r | ma/l TM228 | 2120 | 3680 | 5130 | 4400 | 3070 | 239 |
| | -0.0701 | iign iiii220 | # | # | # | # | # | 200 # |
| Magnasium (diss filt) | <0.026 | mg// TM220 | 64.2 | π Ε// | # EE2 | # 610 | π 042 | 20.0 |
| Magnesium (uiss.iiit) | NU.000 I | lig/i livi220 | 04.2 | J44 # | 555 # | 015 # | 243 # | JU.Z # |
| Determine (direction) | | .// TM000 | # | # | # | # | # | # |
| rolassium (diss.tiit) | <1 mg | µi 1M228 | 267 | 159 | 220 | 1/2 | 145 | 25.5 |
| | | | # | # | # | # | # | # |
| рН | <1 pH U | nits TM256 | 7.89 | 7.38 | 7.93 | 7.31 | 7.85 | 7.54 |
| | | | # | # | # | # | # | # |
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| Results Legend | | Customer Sample Ref. | VF12 | VF3D | | |
|---|-----------------|--------------------------|--------------|-----------------------|------|------|
| # ISO17025 accredited. M mCERTS accredited. | | | | | | |
| aq Aqueous / settled sample. | | Depth (m) | | | | |
| diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. | | Sample Type | Water(GW/SW) | Water(GW/SW) | | |
| * Subcontracted test. | | Date Sampled | 30/11/2016 | 30/11/2016 | | |
| ** % recovery of the surrogate standa check the efficiency of the method. | rd to The | Sample Time | | | | |
| results of individual compounds wi | thin | Date Received SDG Ref | 161203-86 | 161203-86 | | |
| samples aren't corrected for the rec (F) Trigger breach confirmed | covery | Lab Sample No.(s) | 14643507 | 14643501 | | |
| 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | | | | |
| Component | LOD/Un | its Method | | | | |
| Fluoride | <0.5 m | g/l TM104 | <0.5 | <0.5 | | |
| | | | # | # | | |
| Conductivity @ 20 deg.C | <0.005 | 5 TM120 | 1.21 | 3.09 | | |
| | mS/cm | 1 | # | # | | |
| Aluminium (diss.filt) | <0.002 n | ng/l TM152 | <0.002 | <0.002 | | |
| | | | # | # | | |
| Antimony (diss.filt) | <0.0001 | 16 TM152 | <0.00016 | <0.00016 | | |
| | mg/l | | # | # | | |
| Arsenic (diss.filt) | <0.0005 | 51 TM152 | 0.000635 | 0.000755 | | |
| | mg/l | | # | # | | |
| Boron (diss.filt) | <0.005 n | ng/I TM152 | 0.33 | 0.514 | | |
| | | | # | # | | |
| Cadmium (diss.filt) | <0.0000 |)8 TM152 | <0.0008 | <0.00008 | | |
| | mg/l | | # | # | | |
| Chromium (diss.filt) | < 0.001 | 2 TM152 | <0.0012 | <0.0012 | | |
| (| ma/l | | # | # | | |
| Copper (diss filt) | <0.000 | 35 TM152 | <0 00085 | <0 00085 | | |
| coppor (also mil) | -0.0000 ma/l | | -0.00000 # | -0.00000 # | | |
| Manganese (diss filt) | <0 0007 | 76 TM152 | n 0533 | # 0 117 | | |
| manyanese (uiss.iiii) | ~0.000/ ma/l | | 0.0000 # | U.III # | | |
| Malukadanum (diaa filk) | -0.0006 | 20 TM150 | # | # | | |
| Molybaenum (diss.filt) | <0.0006 | DZ 1101152 | 0.000951 | 0.00193 | | |
| | mg/i | | # | # | | |
| Nickel (diss.filt) | <0.0004 | 14 IM152 | <0.00044 | <0.00044 | | |
| | mg/l | | # | # | | |
| Selenium (diss.filt) | <0.0008 | 31 TM152 | <0.00081 | <0.00081 | | |
| | mg/l | | # | # | | |
| Vanadium (diss.filt) | <0.001 | 3 TM152 | <0.0013 | <0.0013 | | |
| | mg/l | | # | # | | |
| Zinc (diss.filt) | <0.001 | 3 TM152 | 0.00294 | 0.00196 | | |
| | mg/l | | # | # | | |
| Mercury (diss.filt) | <0.0000 |)1 TM183 | <0.00001 | <0.00001 | | |
| | mg/l | | # | # | | |
| Sulphate | <2 mg | /I TM184 | <2 | 9.1 | | |
| | Ĵ | | # | # | | |
| Chloride | <2 mg | /I TM184 | 271 | 985 | | |
| | 5 | | # | # | | |
| Calcium (diss filt) | <0.012 n | ng/l TM228 | 84.4 | 161 | | |
| | 0.012 | | # | # | | |
| Sodium (diss filt) | <0.076 n | ng/l TM228 | 150 | .397 | | |
| | 0.0701 | | # | # | | |
| Magnesium (diss filt) | <0.036 m | ng/I TM228 | 10.2 | 55 1 | | |
| magneoium (uioo.iiit) | ~0.030 II | 119/1 11VIZZO | 13.2 | JJ.1 # | | |
| Potossium (diss filt) | <1 m- | // TM220 | 27.2 | 4 3E 1 | | |
| 1 012331111 (1133.1111) | <1 mg | /1 111/220 | ۷.۱۲ | ວວ.1 | | |
| n ∐ | 21 ml 1 1 | nite TM056 | 7 07 | 0 05 | | |
| יוק | < i pH U | 11105 1 IVI200 | 1.91 | с0.0 ш | | |
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PAH Spec MS - Aqueous (W)

| # 1801 | Results Legend | | Cu | istomer Sample Ref. | ES1 | ES2 | TD | VF1 | VF4 | VF5 |
|----------------------------|---|----------------|-------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| # ISO1 M mCEI | RTS accredited. | | | | | | | | | |
| aq Aque diss.filt Disso | eous / settled sample. olved / filtered sample. | | | Depth (m) | | | | | | |
| tot.unfilt Total | I / unfiltered sample. | | | Sample Type | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) | Water(GW/SW) |
| ** % rec | covery of the surrogate standar | rd to | | Sample Time | | 29/11/2010 | | | | |
| check result | ck the efficiency of the method. Its of individual compounds wit | The hin | | Date Received | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 |
| samp | ples aren't corrected for the rec | overy | | SDG Ref | 161203-86 14643494 | 161203-86 14643495 | 161203-86 14643496 | 161203-86 14643497 | 161203-86 14643502 | 161203-86 14643503 |
| 1-5&+§@ Samp | ple deviation (see appendix) | | | AGS Reference | | | | | | |
| Component | t | LOD/U | nits | Method | | | | | | |
| Naphthalene | e (aq) | <0.00 | 01 | TM178 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| | () | mg/l | | | # | # | # | # | # | # |
| Acenaphthen | ne (aq) | <0.000 | 015 | TM178 | <0.000015 | <0.000015 | <0.000015 | <0.000015 | <0.000015 | <0.000015 |
| A 1411 | () | mg/I | 044 | 71470 | # | # | # | # | # | # |
| Acenaphthyle | ene (aq) | <0.000 | 011 | 111178 | <0.00011 | <0.00011 | ×0.000011 | <0.000011 # | <0.000011 # | 0.000015 |
| Fluerenthese | a (a.s.) | -0.000 | 017 | TM170 | # | # | # | # | # | # |
| FIUOIAIIUIEIIE | e (aq) | -0.000 ma/l | 017 | 1101170 | <0.000017 | 0.000022 | <0.000017 # | <0.000017 # | <0.000017 # | 0.000092 # |
| Anthracono (| (20) | <0.000 | 015 | TM178 | π ∠0.000015 | π ∠0.000015 | π ∠0.000015 | π -0.000015 | <i>π</i> | 0.000036 |
| Antinacene (a | (ay) | 0.000 ma/l | 015 | 1101170 | ~0.000013 | ~0.000013 | ~0.000013 | ~0.000013 | <0.000015 # | 0.000050 # |
| Phenanthren | ne (au) | <0.000 | 022 | TM178 | <0.000022 | <0.000022 | <0.000022 | <0.000022 | <0.000022 | 0 000092 |
| 1 Hondrid Hone | io (uq) | ma/l | ULL | | # | # | # | # | # | # |
| Fluorene (ag) | 0 | <0.000 | 014 | TM178 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0 000014 | 0.000022 |
| | 17 | mg/l | | | # | # | # | # | # | # |
| Chrvsene (ad | a) | < 0.000 | 013 | TM178 | <0.000013 | <0.000013 | <0.000013 | <0.000013 | <0.000013 | 0.000077 |
| - , (- 1 | v | mg/l | | | # | # | # | # | # | # |
| Pyrene (ag) | | < 0.000 | 015 | TM178 | <0.000015 | 0.000025 | <0.000015 | <0.000015 | <0.000015 | 0.000124 |
| y (- 1) | | mg/l | | | # | # | # | # | # | # |
| Benzo(a)anth | hracene (aq) | < 0.000 | 017 | TM178 | <0.000017 | <0.000017 | <0.000017 | <0.000017 | <0.000017 | 0.0001 |
| | | mg/l | | | # | # | # | # | # | # |
| Benzo(b)fluor | oranthene (aq) | <0.000 | 023 | TM178 | <0.000023 | <0.000023 | <0.000023 | <0.000023 | <0.000023 | 0.000121 |
| | | mg/l | | | # | # | # | # | # | # |
| Benzo(k)fluor | ranthene (aq) | <0.000 | 027 | TM178 | <0.000027 | <0.000027 | <0.000027 | <0.000027 | <0.000027 | 0.000051 |
| | | mg/l | | | # | # | # | # | # | # |
| Benzo(a)pyre | ene (aq) | <0.000 | 009 | TM178 | <0.00009 | 0.000013 | <0.00009 | <0.00009 | <0.00009 | 0.0001 |
| | | mg/l | | | # | # | # | # | # | # |
| Dibenzo(a,h)a |)anthracene (aq) | <0.000 | 016 | TM178 | <0.00016 | <0.000016 | <0.000016 | <0.000016 | <0.000016 | 0.000023 |
| | | mg/l | | | # | # | # | # | # | # |
| Benzo(g,h,i)p | perylene (aq) | <0.000 | 016 | TM178 | <0.000016 | 0.000022 | <0.000016 | <0.000016 | <0.000016 | 0.000083 |
| | | mg/l | | | # | # | # | # | # | # |
| Indeno(1,2,3- | -cd)pyrene (aq) | <0.000 | 014 | TM178 | <0.000014 | 0.000016 | <0.000014 | <0.000014 | <0.000014 | 0.00006 |
| | | mg/l | 0.1.1 | 714470 | # | # | # | # | # | # |
| PAH, Total D | Detected USEPA 16 | <0.000 | 344 | IM178 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | 0.000996 |
| (aq) | | iiig/i | | | | | | | | |
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|------|------|--------|-------|--------|-----|
| FAIL | Opec | 1010 - | Aque | Jusi | |

| Results Legend | , (11) | Customer Sample Ref. | VF6 | VF7 | VF8 | VF9 | VE10 | VE11 |
|---|-----------------|--------------------------|-----------------------|----------------|----------------|-----------------------|-----------------------|-----------------------|
| # ISO17025 accredited. | | | 10 | VI / | VIO | 115 | VIIO | VIII |
| M mCERTS accredited. ag Aqueous / settled sample. | | | | | | | | |
| diss.filt Dissolved / filtered sample. | | Depth (m) Sample Type | Wata (OW/OW) | Watar/OW/OWD | Wata (CM/CM) | Wata (CW/CW) | Weter(CN//CN/) | |
| tot.unfilt Total / unfiltered sample. * Subcontracted test. | | Date Sampled | 30/11/2016 | 29/11/2016 | 30/11/2016 | 29/11/2016 | 29/11/2016 | 30/11/2016 |
| ** % recovery of the surrogate standa | rd to | Sample Time | | | | | | |
| check the efficiency of the method. results of individual compounds with | The thin | Date Received | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 | 02/12/2016 |
| samples aren't corrected for the rec | overy | SDG Ref | 161203-86 14643504 | 161203-86 | 161203-86 | 161203-86 14643499 | 161203-86 14643500 | 161203-86 14643506 |
| (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix) | | AGS Reference | 11010001 | 11010100 | 11010000 | 11010100 | 11010000 | 11010000 |
| Component | LOD/Ur | its Method | | | | | | |
| Naphthalene (aq) | <0.000 |)1 TM178 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| | mg/l | | # | # | # | # | # | # |
| Acenaphthene (aq) | <0.0000 |)15 TM178 | <0.000015 | <0.000015 | <0.00015 | <0.000015 | <0.000015 | <0.000015 |
| | mg/l | | # | # | # | # | # | # |
| Acenaphthylene (aq) | <0.0000 |)11 TM178 | <0.000011 | <0.000011 | <0.000011 | <0.000011 | <0.000011 | <0.000011 |
| | mg/l | | # | # | # | # | # | # |
| Fluoranthene (aq) | <0.0000 |)17 TM178 | <0.000017 | <0.000017 | <0.000017 | <0.000017 | <0.000017 | <0.000017 |
| | mg/l | | # | # | # | # | # | # |
| Anthracene (ag) | <0.0000 |)15 TM178 | <0.00015 | <0.00015 | <0.00015 | <0.000015 | <0.000015 | <0.000015 |
| Υ D | mg/l | | # | # | # | # | # | # |
| Phenanthrene (ag) | < 0.0000 |)22 TM178 | <0.000022 | 0.00003 | <0.000022 | <0.000022 | <0.000022 | <0.000022 |
| C 17 | mg/l | | # | # | # | # | # | # |
| Fluorene (ag) | <0.0000 |)14 TM178 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.00014 |
| 7. 1/ | ma/l | | # | # | # | # | # | # |
| Chrvsene (ag) | <0.000 |)13 TM178 | <0.000013 | <0.000013 | <0.000013 | <0.000013 | <0.000013 | <0.000013 |
|) 00000 (004) | ma/l | | ± | ± | # | ± | # | ± |
| Pyrene (an) | <0.000 |)15 TM178 | π <0.000015 | π 0.000022 | π <0.00015 | π <0.00015 | | π <0 00015 |
| r yielle (aq) | -0.0000 ma/l | | <0.000015 # | 0.000022 | ~0.000013 # | ~0.000015 # | ~0.000015 # | ~0.000013 # |
| Benzo(a)anthraceno (ag) | <0.0000 | 17 TM179 | # <0.000017 | # <0.000017 | # <0.000017 | # <0.000017 | # <0.000017 | # <0.000017 |
| Benzo(a)antinacene (aq) | <0.0000 ma/l | | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # | <0.000017 # |
| Danza (h) fluaranthana (az) | -0.000 | 100 TM470 | # | # | # | # | # | # |
| Benzo(b)filiorantnene (aq) | <0.0000 | JZ3 IWI178 | <0.000023 | <0.000023 | <0.000023 | <0.000023 بر | ×0.000023 بر | ×0.000023 بر |
| | mg/i | 07 TM470 | # | # | # | # | # | # |
| Benzo(k)fluoranthene (aq) | <0.0000 | 127 IM178 | <0.000027 | <0.000027 | <0.000027 | <0.000027 | <0.000027 | <0.000027 |
| | mg/i | | # | # | # | # | # | # |
| Benzo(a)pyrene (aq) | <0.0000 | 009 TM178 | <0.00009 | <0.00009 | <0.00009 | <0.00009 | <0.00009 | <0.00009 |
| | mg/l | | # | # | # | # | # | # |
| Dibenzo(a,h)anthracene (aq) | <0.0000 | 016 TM178 | <0.000016 | <0.000016 | <0.000016 | <0.000016 | <0.000016 | <0.000016 |
| | mg/l | | # | # | # | # | # | # |
| Benzo(g,h,i)perylene (aq) | <0.0000 | 016 TM178 | <0.000016 | 0.000017 | <0.000016 | <0.000016 | <0.000016 | <0.000016 |
| | mg/l | | # | # | # | # | # | # |
| Indeno(1,2,3-cd)pyrene (aq) | <0.0000 | 014 TM178 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 | <0.000014 |
| | mg/l | | # | # | # | # | # | # |
| PAH, Total Detected USEPA 16 | <0.0003 | 344 TM178 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 | <0.000344 |
| (aq) | mg/l | | | | | | | |
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PAH Spec MS - Aqueous (W)

| [| Results Legend | ,, | Customer Sample Ref | \/E12 | VE3D | | |
|------------------|--|----------------|---------------------|---------------------------------------|-------------------------|--|--|
| # M | ISO17025 accredited. mCERTS accredited. | | | • • • • • • • • • • • • • • • • • • • | VF3D | | |
| aq diss filt | Aqueous / settled sample. | | Depth (m |) | | | |
| tot.unfilt | Total / unfiltered sample. | | Sample Type | Water(GW/SW) | Water(GW/SW) | | |
| ** | % recovery of the surrogate standa | rd to | Sample Time | | | | |
| | results of individual compounds wi | ithin | Date Received | 02/12/2016 f 161203-86 | 02/12/2016 161203-86 | | |
| (F) | samples aren't corrected for the rec Trigger breach confirmed | covery | Lab Sample No.(s | 14643507 | 14643501 | | |
| 1-5&+§@ Compo | Sample deviation (see appendix) | LOD/U | AGS Reference | 2 | | | |
| Naphth | alene (aq) | <0.00 mg/l | 01 TM178 | <0.0001 | <0.0001 # | | |
| Acenap | hthene (aq) | <0.000 mg/l | 015 TM178 | <0.000015 | <0.000015 | | |
| Acenap | hthylene (aq) | <0.000 mg/l | 011 TM178 | <0.000011 # | <0.000011 # | | |
| Fluoran | thene (aq) | <0.000 mg/l | 017 TM178 | 0.000036 | <0.000017 # | | |
| Anthrac | ene (aq) | <0.000 mg/ | 015 TM178 | <0.000015 | <0.000015 # | | |
| Phenan | threne (aq) | <0.000 mg/l | 022 TM178 | 0.000023 | 0.000042 | | |
| Fluoren | e (aq) | <0.000 ma/l | 014 TM178 | <0.000014 # | 0.000017 # | | |
| Chrysei | ne (aq) | <0.000 mg/l | 013 TM178 | <0.000013 # | <0.000013 # | | |
| Pyrene | (aq) | <0.000 mg/l | 015 TM178 | 0.000074 # | 0.000023 | | |
| Benzo(a | a)anthracene (aq) | <0.000 mg/l | 017 TM178 | <0.000017 # | <0.000017 # | | |
| Benzo(I | b)fluoranthene (aq) | <0.000 mg/l | 023 TM178 | <0.000023 # | <0.000023 # | | |
| Benzo(| ()fluoranthene (aq) | <0.000 mg/l | 027 TM178 | <0.000027 # | <0.000027 # | | |
| Benzo(a | a)pyrene (aq) | <0.000 mg/l | 009 TM178 | <0.00009 | <0.00009 | | |
| Dibenzo | o(a,h)anthracene (aq) | <0.000 mg/l | 016 TM178 | <0.000016 # | <0.000016 # | | |
| Benzo(| g,h,i)perylene (aq) | <0.000 mg/l | 016 TM178 | 0.000019 # | <0.000016 # | | |
| Indeno(| 1,2,3-cd)pyrene (aq) | <0.000 mg/l | 014 TM178 | <0.000014 # | <0.000014 # | | |
| PAH, To (aq) | otal Detected USEPA 16 | <0.000 mg/l | 344 TM178 | <0.000344 | <0.000344 | | |
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161203-86

CERTIFICATE OF ANALYSIS

Validated

405.00481.00033.01 Report Number: Superseded Report: 390094 SDG: Client Reference: Valleyfield Order Number: 405/8729 Location:

Table of Results - Appendix

| Method No | Reference | Description | Wet/Dry Sample ¹ | Surrogate Corrected |
|-----------|---|---|--------------------------------|------------------------|
| TM104 | Method 4500F, AWWA/APHA, 20th Ed., 1999 | Determination of Fluoride using the Kone Analyser | | |
| TM120 | Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970 | Determination of Electrical Conductivity using a Conductivity Meter | | |
| TM152 | Method 3125B, AWWA/APHA, 20th Ed., 1999 | Analysis of Aqueous Samples by ICP-MS | | |
| TM178 | Modified: US EPA Method 8100 | Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters | | |
| TM183 | BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3 | Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry | | |
| TM184 | EPA Methods 325.1 & 325.2, | The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers | | |
| TM228 | US EPA Method 6010B | Determination of Major Cations in Water by iCap 6500 Duo ICP-OES | | |
| TM256 | The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4. | Determination of pH in Water and Leachate using the GLpH pH Meter | | |

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



Validated

| SDG: | 161203-86 | Client Reference: | 405.00481.00033.01 | Report Number: | 390094 |
|-----------|-------------|-------------------|--------------------|--------------------|--------|
| Location: | Valleyfield | Order Number: | 405/8729 | Superseded Report: | |

Test Completion Dates

| Lab Sample No(s) | 14643494 | 14643495 | 14643496 | 14643497 | 14643502 | 14643503 | 14643504 | 14643498 | 14643505 | 14643499 |
|----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Customer Sample Ref. | ES1 | ES2 | TD | VF1 | VF4 | VF5 | VF6 | VF7 | VF8 | VF9 |
| AGS Ref. | | | | | | | | | | |
| Depth | | | | | | | | | | |
| Туре | LIQUID |
| Anions by Kone (w) | 09-Dec-2016 |
| Conductivity (at 20 deg.C) | 09-Dec-2016 |
| Dissolved Metals by ICP-MS | 09-Dec-2016 |
| Fluoride | 07-Dec-2016 |
| Mercury Dissolved | 09-Dec-2016 |
| Metals by iCap-OES Dissolved (W) | 12-Dec-2016 | 12-Dec-2016 | 09-Dec-2016 | 12-Dec-2016 | 12-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 12-Dec-2016 | 12-Dec-2016 |
| PAH Spec MS - Aqueous (W) | 09-Dec-2016 |
| pH Value | 08-Dec-2016 | 08-Dec-2016 | 07-Dec-2016 |

| Lab Sample No(s) | 14643500 | 14643506 | 14643507 | 14643501 |
|----------------------------------|-------------|-------------|-------------|-------------|
| Customer Sample Ref. | VF10 | VF11 | VF12 | VF3D |
| AGS Ref. | | | | |
| Depth | | | | |
| Туре | LIQUID | LIQUID | LIQUID | LIQUID |
| Anions by Kone (w) | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 |
| Conductivity (at 20 deg.C) | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 |
| Dissolved Metals by ICP-MS | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 |
| Fluoride | 07-Dec-2016 | 07-Dec-2016 | 07-Dec-2016 | 07-Dec-2016 |
| Mercury Dissolved | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 |
| Metals by iCap-OES Dissolved (W) | 13-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 13-Dec-2016 |
| PAH Spec MS - Aqueous (W) | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 | 09-Dec-2016 |
| pH Value | 07-Dec-2016 | 08-Dec-2016 | 08-Dec-2016 | 08-Dec-2016 |



Appendix

General

for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 25 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except 20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis

> 21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

> 22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

> 23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

| 1 | Container with Headspace provided for volatiles analysis |
|---|--|
| 2 | Incorrect container received |
| 3 | Deviation from method |
| 4 | Holding time exceeded before sample received |
| 5 | Samples exceeded holding time before presevation was performed |
| § | Sampled on date not provided |
| • | Sample holding time exceeded in laboratory |
| @ | Sample holding time exceeded due to sampled on date |
| & | Sample Holding Time exceeded - Late arrival of instructions. |

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

| Asbe stos Type | Common Name | | |
|---------------------------|-----------------|--|--|
| Chrysofile | WhiteAsbestos | | |
| Amosite | Brow n Asbestos | | |
| Cro ci dolite | Blue Asbe stos | | |
| Fibrous Actinolite | - | | |
| Fib to us Anthop hyll ite | - | | |
| Fibrous Tremolite | - | | |

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.





VF4 • VF6
Appendix B

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - 2016 Boron Data PFA Boreholes



Appendix B

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2016 Annual Environmental Review Valleyfield Ash Lagoons - 2016 Cadmium Data









Appendix C

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Groundwater Elevation PFA Boreholes



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Antimony Data Supernatant



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Arsenic Data Supernatant



▲ SN

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Boron Data Supernatant



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Cadmium Data Supernatant



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Molybdenum Data





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Selenium Data Supernatant



▲ SN

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Vanadium Data Supernatant



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Toe Drain

March 2017



▲ TD

SLR

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Arsenic Data Toe Drain



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Boron Data Toe Drain



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Cadmium Data Toe Drain





SLR Ref: 405.00481.00033

Scottish Power Generation Ltd.

▲ TD

SLR

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Selenium Data Toe Drain



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Vanadium Data Toe Drain



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Antimony Data Estuarine Locations



▲ ES1 ▲ ES2

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Arsenic Data Estuarine Locations





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Boron Data Estuarine Locations



▲ ES1 ▲ ES2

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Cadmium Data Estuarine Locations





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Molybdenum Data

Estuarine Locations





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Selenium Data Estuarine Locations





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Vanadium Data Estuarine Locations





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

2016 Annual Environmental Review Valleyfield Ash Lagoons - 2016 Antimony Data



◆ VF1 ▲ VF3D ■ VF5 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - 2016 Boron Data



◆ VF1 ▲ VF3D ■ VF5 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

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2016 Annual Environmental Review Valleyfield Ash Lagoons - 2016 Cadmium Data



◆ VF1 ▲ VF3D ■ VF5 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12



◆ VF1 ▲ VF3D ■ VF5 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

2016 Annual Environmental Review Valleyfield Ash Lagoons - 2016 Selenium Data





◆ VF1 ▲ VF3D ■ VF5 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

2016 Annual Environmental Review Valleyfield Ash Lagoons - 2016 Vanadium Data




Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review

Valleyfield Ash Lagoons - Antimony Data



◆ VF1 --- Control Level --- · Trigger Level

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Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review



■ VF5 - - - Control Level - - - · Trigger Level

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review

Valleyfield Ash Lagoons - Antimony Data VF7



• VF7 --- Control Level --- Trigger Level

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review

Valleyfield Ash Lagoons - Antimony Data VF8



◆ VF8 - - - Control Level - - - · Trigger Level

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review

Valleyfield Ash Lagoons - Antimony Data VF9



▲ VF9 --- Control Level --- Trigger Level

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Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review





Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review



• VF12 --- Control Level --- Trigger Level

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Valleyfield Ash Lagoons - Boron Data VF1



◆ VF1 --- Control Level --- Trigger Level

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◆ VF8 --- Control Level --- Trigger Level

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▲ VF9 --- Control Level --- Trigger Level

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review





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Valleyfield Ash Lagoons - Boron Data VF11



• VF11 --- Control Level --- Trigger Level

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• VF12 --- Control Level --- Trigger Level

Scottish Power Generation Ltd. Appendix H Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review Valleyfield Ash Lagoons - Cadmium Data

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--- Control Level --- Trigger Level VF1 ٠

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March 2017



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March 2017





- - Control Level - - - · Trigger Level VF5 _

SLR Ref: 405.00481.00033

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Control Level – – – · Trigger Level VF7 • - -

Appendix H

Valleyfield Ash Lagoons - Cadmium Data





• VF8 - - - Control Level - - - · Trigger Level

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SLR

Valleyfield Ash Lagoons - Cadmium Data VF11





Appendix H

Valleyfield Ash Lagoons - Cadmium Data VF12



• VF12 --- Control Level --- Trigger Level

Valleyfield Ash Lagoons - Vanadium Data





◆ VF1 --- Control Level --- Trigger Level

Appendix H

Appendix H

Valleyfield Ash Lagoons - Vanadium Data VF3D





Appendix H

Valleyfield Ash Lagoons - Vanadium Data





■ VF5 --- Control Level --- Trigger Level

Valleyfield Ash Lagoons - Vanadium Data

VF7



• VF7 --- Control Level --- Trigger Level

Appendix H

Valleyfield Ash Lagoons - Vanadium Data VF8

0.4 0.35 0.3 **Concentration (mg/l)** 0.2 0.15 0.2 0.1 0.05 0 01/01/2004 01/01/2006 01/01/2008 01/01/2010 01/01/2012 01/01/2014 01/01/2016 01/01/2018 Date

◆ VF8 --- Control Level --- · Trigger Level

Appendix H

Valleyfield Ash Lagoons - Vanadium Data

VF9



▲ VF9 --- Control Level --- Trigger Level

Appendix H

Valleyfield Ash Lagoons - Vanadium Data VF10





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Valleyfield Ash Lagoons - Vanadium Data VF11




Appendix H

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2015 Annual Environmental Review

Valleyfield Ash Lagoons - Vanadium Data VF12



• VF12 --- Control Level --- Trigger Level

Appendix I

Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Groundwater Elevation



◆ VF1 ▲ VF3D ■ VF5 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

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Valleyfield Ash Lagoons - Methane Concentration

Trigger Level (1 % v/v)



Scottish Power Generation Ltd. Valleyfield Ash Lagoons: PPC/A/1004266 2016 Annual Environmental Review

Valleyfield Ash Lagoons - Methane Concentration

VF3D Trigger Level (3.4 % v/v)



▲ VF3D --- Trigger Level

| Δn | nendiv | 1 |
|----|--------|---|
| AΡ | penuix | J |

Valleyfield Ash Lagoons - Methane Concentration

VF5 Trigger Level (12.8 % v/v)



VF5 – – – Trigger Level

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Valleyfield Ash Lagoons - Methane Concentration





• VF12 – – – · Trigger Level

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|-------|-----|------|----|----|
| · · · | PPC | i iu | ~ | v |



■ VF10 – – – · Trigger Level

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|-----|---------|---|
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| ·γρ | PULIUIA | J |

2016 Annual Environmental Review Valleyfield Ash Lagoons - Carbon Dioxide Concentration





• VF12 – – – · Trigger Level

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Valleyfield Ash Lagoons - Oxygen Concentration



◆ VF1 ▲ VF3D ◆ VF4 ■ VF5 ● VF6 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

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Valleyfield Ash Lagoons - Methane Concentration



◆ VF1 ▲ VF3D ◆ VF4 ■ VF5 ● VF6 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

2016 Annual Environmental Review Valleyfield Ash Lagoons - Carbon Dioxide Concentration



◆ VF1 ▲ VF3D ◆ VF4 ■ VF5 ● VF6 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

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Valleyfield Ash Lagoons - Methane Concentration 2016 Data



| Scottish Power Generation Ltd. |
|--|
| Valleyfield Ash Lagoons: PPC/A/1004266 |
| 2016 Annual Environmental Paviaw |

2016 Annual Environmental Review Valleyfield Ash Lagoons - Carbon Dioxide Concentration 2016 Data



◆ VF1 ▲ VF3D ◆ VF4 ■ VF5 ● VF6 ● VF7 ◆ VF8 ▲ VF9 ■ VF10 ● VF11 ◆ VF12

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