

IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

CONTRACT DRILLING
SITE INVESTIGATION

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PROPOSED LANDFILL RESTORATION AT NEWCASTLE WEST

**SITE INVESTIGATION
FACTUAL REPORT**

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Limerick County Council,
County Hall,
Dooradoyle,
Co. Limerick.

Tobin Environmental Services Ltd.,
Consulting Engineers,
Block 10-4,
Blanchardstown Corporate Park,
Blanchardstown,
Dublin 15.

January 2013

FOREWORD

The borehole records have been compiled from an examination of the samples by a Geotechnical Engineer and from the Drillers' descriptions. The work was carried out in accordance with BS5930 (1999) and BS1377 (1990).

The report presents an opinion on the configuration of the strata within the site based on the borehole results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes.

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2.0	The Site & Geology
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1.0 Introduction.

Irish Drilling Ltd. (IDL) was instructed by Tobin Consulting Engineers., on behalf of Limerick County Council, to carry out a site investigation on the site of the proposed Newcastle West Landfill Restoration.

This site investigation was carried out to allow for the installation of gas and groundwater monitoring standpipes at the disused landfill site.

The fieldwork commenced on November 29th 2012 and was completed on December 4th 2012.

2.0 Site & Geology

The site is located at Churchtown, Newcastle West, County Limerick.

Geological Survey maps of the area indicate that the site is underlain by Carboniferous Limestone Rock Formations.

A Site Plan, prepared by the client's representatives and showing 'as-built' fieldwork locations, is included with this report.

3.0 Fieldwork.

The following plant was mobilised to site to carry out fieldwork operations:

A BBS37 GoTract Rotary Core Drilling Rig.

Fieldwork carried out to date has included the following:

Three rotary boreholes, using openhole drilling techniques, were carried to a depth of 6.00m below ground level.

A 50mm diameter gas standpipe was installed in the boreholes to allow for the monitoring of gas levels over a prolonged period of time.

Two rotary core boreholes were carried out to establish overburden conditions and rockhead and to establish the nature and integrity of the underlying rock.

Wireline drilling techniques, using GeoboreS size drill strings, were carried out to recover 100mm diameter soil and rock core samples at location BH 09.

PQ size (84mm diameter core samples) rotary core drilling was carried out at borehole BH 10.

The samples were stored in wooden boxes and returned to the laboratory where there were logged and photographed by a Geotechnical Engineer.

A 50mm diameter standpipe was installed in borehole BH 10 to allow for the monitoring of groundwater levels over a prolonged period of time.

The rotary core boreholes were carried out using a BBS37 GoTract Rotary Core Drilling Rig to depths ranging from 20.00m to 30.00m below ground level.

Borehole BH 09 was carried out using GeoboreS size drill strings to allow for the completion of a Pump Test using a 100mm diameter submersible pump.

Data loggers were installed in a number of boreholes to act as observation wells during the pump test operations.



A 72-hour Pump Test was carried out on December 10th 2012 by Hydro-Environmental Services Limited and the results of this Pump Test are presented as a 'stand-alone' report and are included in the appendices.

On completion of the Pump Test operations the temporary steel casing was removed from the borehole BH 09 and a 50mm diameter standpipe was installed to allow for the monitoring of groundwater levels over a prolonged period of time.

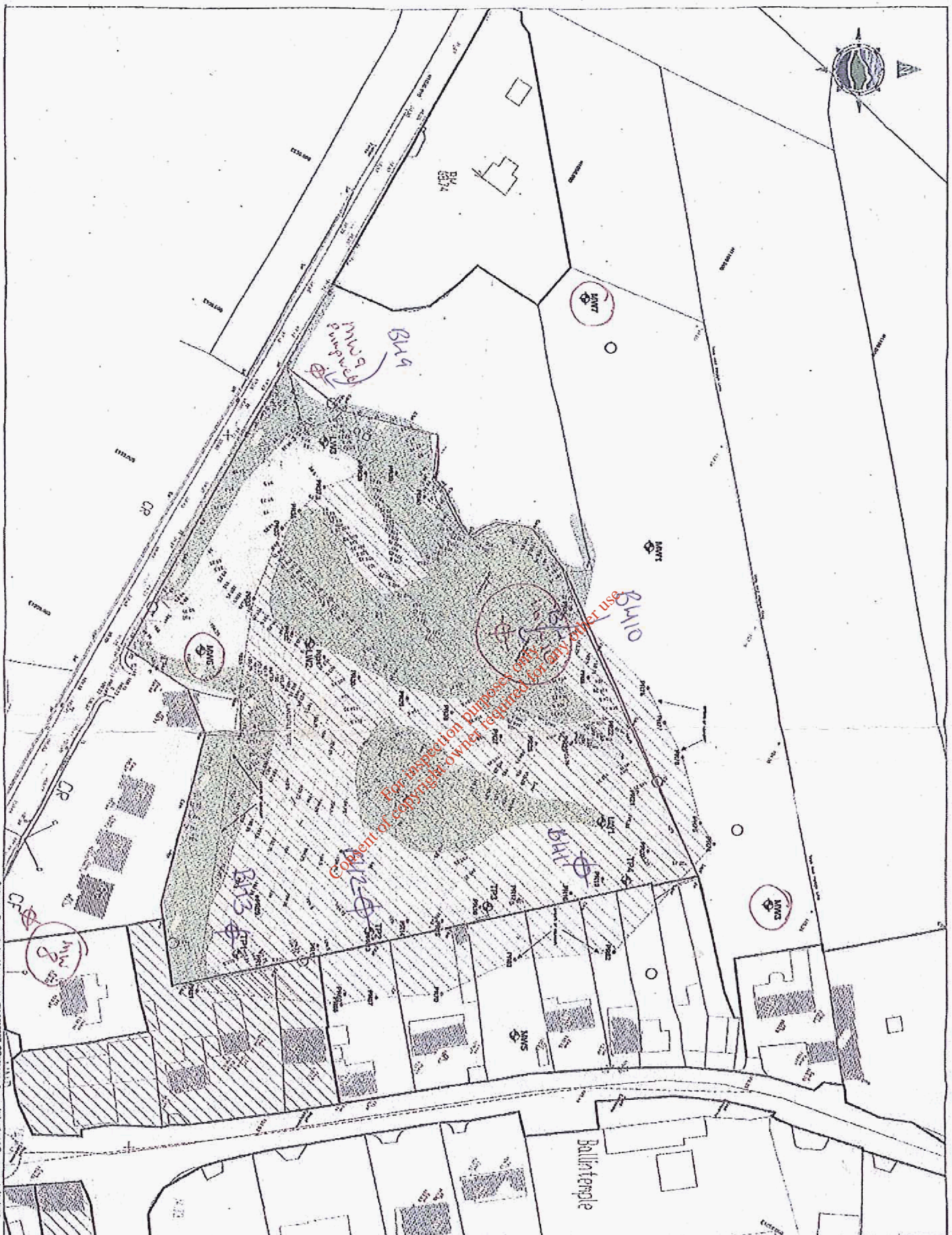
Reference should be made to the engineering logs for a detailed description of the ground conditions encountered.

The borehole locations were set out on site using a GPS Surveying Unit and the co-ordinates are included on the logs presented in the appendices.

The fieldwork was carried out in accordance with BS5930 (1999), Code of Practice for Site Investigations.

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Ronan Killeen
Chartered Engineers
Irish Drilling Limited
January 7th 2013.



Ordinance Survey Masterplan No. 21/07/2007. Copyright Survey Ireland and Government of Ireland.

TOBIN
 Technical Drawing
 2928-3004
 A

CLIENT
 LIMERICK COUNTY COUNCIL

PROJECT
 NEWCASTLE WEST LANDFILL RESTORATION

TITLE
 AS BORED GROUNDWATER AND LEACHATE MONITORING WELLS

Scale 1:500
Drawn J.M.V.T
Checked J.M.V.T
Approved J.M.V.T

No.	Description	Date	By	Check

NOTES

1. FINISHED DIMENSIONS ONLY TO BE TAKEN FROM THE DRAWING
2. ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. SUBMITTER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATIVE TO ORDNANCE MESH (OS) DATUM

LEGEND

- MW2 GROUNDWATER MONITORING WELLS
- MW3 LEACHATE MONITORING WELLS
- TP2 TOTAL PIT LOCATIONS
- EXTENT OF WASTE
- PROBE LOCATIONS
- CONTOURS

APPENDIX 1

**BOREHOLE RECORDS
(ROTARY CORE)**

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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 1
Job No	Date 30-11-12 30-11-12	Ground Level (m) 77.22	Co-Ordinates () E 127,497.8 N 134,642.5		
Engineer Tobin				Sheet 1 of 1	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'ed Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
			71.22		(6.00) 6.00	Open hole drilling - no recovery.				
						BH terminated at 6.00m bgl on RE's instruction.				

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IDL AGSS UK DH NEWCASTLE WEST LANDFILL BHS 9 AND 10 DEC 21 2012.GPJ IDL TP TEMPLATE.GDT 7/1/13

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
												50mm standpipe installed to 6m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit Geobore DesignS	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 2
Job No	Date 30-11-12 30-11-12	Ground Level (m) 76.90	Co-Ordinates () E 127,508.3 N 134,584.5		
Engineer Tobin				Sheet	1 of 1
				Rev.	

RUN DETAILS						STRATA			Geology	Instrument/Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
			70.90		(6.00)			Open hole drilling - no recovery.		
					6.00			BH terminated at 6.00m bgl on RE's instruction.		

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Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
												50mm standpipe installed to 6m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit Geobore DesignS	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West , Co Limerick		DRILLHOLE No BH 3
Job No	Date 29-11-12 29-11-12	Ground Level (m) 75.50	Co-Ordinates () E 127,515.7 N 134,542.5		
Engineer Tobin				Sheet 1 of 1	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
			69.50		(6.00) 6.00	Open hole drilling - no recovery.				
						BH terminated at 6.00m bgl on RE's instruction.				

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IDL AGS3 UK DH NEWCASTLE WEST LANDFILL BHS 9 AND 10 DEC 21 2012.GPJ IDL TP TEMPLATE.GDT 7/1/13

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
												50mm standpipe installed to 6m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit Geobore DesignS	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 9
Job No	Date 04-12-12 04-12-12	Ground Level (m) 67.97	Co-Ordinates () E 127,350.5 N 134,567.6		
Engineer Tobin				Sheet 1 of 4	Rev.

RUN DETAILS						STRATA			Geology	Instrument/Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
0.00						0.00 m to 13.90m: overburden.	Open hole drilling - no recovery.			

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Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type		Return (%)
								0	30.00	water	100%	50mm standpipe installed to 30m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit DesignS	Geobore NV	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 9
Job No	Date 04-12-12 04-12-12	Ground Level (m) 67.97	Co-Ordinates () E 127,350.5 N 134,567.6		
Engineer Tobin				Sheet 2 of 4	Rev.

RUN DETAILS						STRATA			Geology	Instrument/Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'ed Level	Legend	Depth (Thick-ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
13.00		NA	54.97		13.00			Open hole drilling - no recovery. (continued)		
14.50	40 (22) 0	NA NI	54.07		(0.90) 13.90	13.90 m to 14.50m: Non-intact as weathered rock.		No recovery. Probable weathered rock.		
17.50	67 (44) 21	NR/NI			(3.80)	14.50 m to 17.50m: Non-intact as weathered rock. No recovery as tube failed to lock during drilling.		Weathered LIMESTONE rock. Recovered as angular medium to coarse gravel and cobble sized clasts with some orange and orange brown clay and orange iron stain and smear. 14.50m to 17.50m: core loss due to tube failing to lock.		
19.00	100 (93) 43	NI 1 15	50.27		17.70	17.70 m to 30.00m: Medium spaced, dipping 36 to 38°, undulating, locally irregular, locally interlocking, smooth, with a little grey clay and orange iron stain and smear.		Extremely strong apparently massive grey 'marbled' light grey and white fine and medium grained sparry LIMESTONE. Weathered with a colour change to light grey along discontinuities penetrating 1mm to 2mm.		
	100 (98) 92	1				17.90 m to 18.05m: Joint: subvertical dip, undulating, smooth, with orange iron stain, open.				
						18.35 m to 18.85m: Joint: subvertical dip, undulating, smooth, with orange and orange brown iron stain, open.				

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Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Standing	From (m)	To (m)	Type		Return (%)
												50mm standpipe installed to 30m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit DesignS	Geobore NV	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West , Co Limerick		DRILLHOLE No BH 9
Job No	Date 04-12-12 04-12-12	Ground Level (m) 67.97	Co-Ordinates () E 127,350.5 N 134,567.6		
Engineer Tobin				Sheet 3 of 4	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
20.50		2						Extremely strong apparently massive grey 'marbled' light grey and white fine and medium grained sparry LIMESTONE. Weathered with a colour change to light grey along discontinuities penetrating 1mm to 2mm. (continued)		
	100 (95) 77	4				20.80 m to 20.95m: Joint: subvertical dip, undulating, rough, with a little orange brown iron stain, open. 21.10 m to 21.20m: Joint: dipping 60°, undulating, interlocking, smooth, with orange and orange brown iron stain, open.				
22.00										
	100 (94) 61	2				22.75 m to 22.90m: Joint: subvertical dip, undulating, smooth, with minor orange brown iron stain, open. 23.10 m to 23.50m: Joint: subvertical dip, undulating, rough, with orange and orange brown iron stain, open.				
23.50		7								
	100 (93) 63	3				23.70 m to 24.05m: Joint: subvertical dip, undulating, rough, with orange and orange brown iron stain, open.				
25.00										
	100 (91) 62	3				25.75 m to 26.05m: Joint: subvertical dip, undulating, smooth, with minor dark orange brown iron stain, open. 26.10 m to 27.90m: Joint: subvertical dip, undulating, locally planar, rough, with a little orange brown clay and some orange and orange brown iron stain and smear, open.				
26.50		11								
	100 (96) 8	7								
28.00										
	100 (82) 59	3								
29.50		4								
	100 (98) 92									
30.00			37.97		30.00					

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IDL AGS3 UK DH NEWCASTLE WEST LANDFILL BHS 9 AND 10 DEC 21 2012.GPJ IDL TP TEMPLATE.GDT 7/1/13

Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Standing	From (m)	To (m)	Type		Return (%)
												50mm standpipe installed to 30m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit Geobore DesignS	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West , Co Limerick		DRILLHOLE No BH 9
Job No	Date 04-12-12 04-12-12	Ground Level (m) 67.97	Co-Ordinates () E 127,350.5 N 134,567.6		
Engineer Tobin				Sheet 4 of 4	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'ed Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
						BH terminated at 30.00m bgl on RE's instruction.				

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Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type		Return (%)
												50mm standpipe installed to 30m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit DesignS	Geobore NV	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 10
Job No	Date 03-12-12 04-12-12	Ground Level (m) 75.10	Co-Ordinates () E 127,421.9 N 134,630.3		
Engineer Tobin				Sheet 1 of 3	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
0.00						0.00 m to 13.20m: overburden.		Open hole drilling - no recovery.		

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Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type		Return (%)
								0	20.00	water	100%	50mm standpipe installed to 20m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit PQ Design	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 10
Job No	Date 03-12-12 04-12-12	Ground Level (m) 75.10	Co-Ordinates () E 127,421.9 N 134,630.3		
Engineer Tobin				Sheet 2 of 3	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'ed Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
13.20			61.90		13.20	Open hole drilling - no recovery. <i>(continued)</i>				
14.50	92 (88) 66	2			(6.80)	13.20 m to 20.00m: Medium spaced, dipping 18 to 20°, irregular, locally interlocking, rough, with some orange brown clay and much orange brown and orange iron stain and smear.				
16.00	100 (96) 70	5	15.70 m to 16.00m: Joint: subvertical dip, undulating, locally irregular, rough, with a little orange brown clay and minor orange iron stain, open.							
17.50	100 (95) 56	5	16.15 m to 16.80m: Joint: subvertical dip, undulating, locally irregular, rough, with a little orange brown clay and minor orange iron stain, open.							
19.00	67 (32) 14	5	17.30 m to 17.80m: Joint: subvertical dip, undulating, locally irregular, rough, with a little orange brown clay and much orange and orange brown iron stain smear and powder, open.							
20.00	90 (0) 0	NR/NI	17.80 to 20.00m: becoming brownish grey vuggy weakly dolomitised.							
			18.50 m to 20.00m: Non-intact as weathered rock. No recovery as possible washout of fines during drilling.							
20.00			55.10		20.00	18.50m: non-intact as angular fine to coarse gravel and cobble sized clasts with much orange brown clay and much orange brown iron stain and smear.				

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IDL-AGSS-UK-DH-NEWCASTLE-WEST-LANDFILL-BHS-9-AND-10-DEC-21-2012-GPJ-IDL-TP-TEMPLATE-GDT-7/1/13

Drilling Progress and Water Observations							Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type		Return (%)
												50mm standpipe installed to 20m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit Design PQ	Driller NV	Logged By EAT
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DRILLHOLE LOG

Project Newcastle West Landfill Restoration			Location Newcastle West, Co Limerick		DRILLHOLE No BH 10
Job No	Date 03-12-12 04-12-12	Ground Level (m) 75.10	Co-Ordinates () E 127,421.9 N 134,630.3		
Engineer Tobin				Sheet 3 of 3	Rev.

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'ed Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
						BH terminated at 20.00m bgl on RE's instruction.				

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Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
												50mm standpipe installed to 20m depth. Gas monitoring tap fitted.

All dimensions in metres Scale 1:62.5	Client Limerick County Council	Method/ Plant Used Hydreq	Bit PQ Design NV	Driller NV	Logged By EAT
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APPENDIX 2
PUMP TEST RECORDS

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**PUMPING TEST FACTUAL REPORT
NEWCASTLEWEST, CO. LIMERICK**

DRAFT REPORT

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Prepared for:
IRISH DRILLING LTD

Prepared by:
HYDRO-ENVIRONMENTAL SERVICES

DOCUMENT INFORMATION


DOCUMENT TITLE:	PUMPING TEST FACTUAL REPORT – NEWCASTLEWEST, CO. LIMERICK
ISSUE DATE:	04TH JANUARY 2013
PROJECT NUMBER:	P1211
PROJECT REPORTING HISTORY:	NONE
CURRENT REVISION NO:	P1211
AUTHOR(S):	MICHAEL GILL DAVID BRODERICK
SIGNED:	 <hr/> Michael Gill B.A., B.A.I., M.Sc., MIEI Managing Director – Hydro-Environmental Services
<p>Disclaimer: This report has been prepared by HES with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our terms and conditions and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.</p>	

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FIGURES

FIGURE 1	WELL LOCATION MAP
FIGURE 2	DRAWDOWN & RECOVERY IN PW1
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TABLES IN TEXT

TABLE A	GROUNDWATER MONITORING FREQUENCIES
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APPENDICES

APPENDIX I	PW1 DISCHARGE DATA
APPENDIX II	ALL PUMPING TEST WATER LEVEL

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1.0 PUMPING TEST RESULTS

1.1 INTRODUCTION

Hydro-Environmental Services (HES) were commissioned to complete a 72 hour pumping test at an old restored landfill site near Newcastlewest, Co. Limerick.

Along with the pumping well (PW1) a total of 5 no. observation wells were monitored during the pumping test. These were MW03, MW06, MW07, MW08, MW10. The layout of the pumping well and the monitoring wells are shown on Figure 1.

This report provides recorded water level data from the pumping test and subsequent recovery period. Field chemistry data and flow data, which were recorded regularly throughout the test, are also presented.

1.2 PW1 - PUMPING TEST METHODOLOGY

A 4" electrical submersible pump was installed in the pumping well PW1 on 10th December 2012. A 2" discharge line (40m of 2" layflat discharge hose) was laid out and directed away from the pumping well with the final outfall to a County Council owned stormwater culvert located on the public road to the south of the site. A 2" mag meter (electrical water meter) was connected along the discharge line and a gate valve was also included (in-line) to allow regulation/variation of the discharge rate (flow), if required. The pump was connected to a 6 KV diesel generator. A photograph of the flowmeter and discharge line is shown below.

Plate 1. Photograph of pumping test setup at PW1.



"Diver"¹ water level dataloggers were installed in the pumping well (PW1) and the five observation wells (MW3, MW6, MW7, MW8 and MW10) to allow continuous monitoring of water levels during the pumping test and subsequent recovery test. Groundwater levels were recorded in the pumping well at 1 minute intervals and in the observation wells at 5 or 15 minute intervals for the duration of the test.

¹ Water level pressure transducers with inbuilt datalogger.
(<http://www.slb.com/content/services/additional/water/monitoring/dataloggers/index.asp>).

The pumping test was completed in accordance with BS5930: 1999 – Code of practice for site investigations, and with BS6316: 1992 Code of practice for test pumping of water wells. Additional guidance on pumping test methodology was taken from Wright, 1985.

Manual groundwater level monitoring in the pumping well was completed when possible at the intervals shown in Table A. Discharge (flow) from the pumping well was also recorded regularly throughout the test. Manual water level monitoring was also completed regularly in the observation wells during the test.

Table A. Groundwater level monitoring frequencies.

Time Interval	Monitoring Frequency
0-2 mins	Every 30 seconds
2-5 mins	Every 1 minute
5-20 mins	Every 2 minutes 30 seconds
20-40 mins	Every 5 minutes
40-60 mins	Every 10 minutes
60-75 mins	Every 15 minutes
75-100 mins	Every 25 minutes
100-120 mins	Every 20 minutes
2-8 hours	Every 30 minutes

1.3 PW1 – PRE-PUMPING TEST

A standard step test was initially attempted on the pumping well on 10th December 2012, however due to the relatively low discharge rate (due to the low yield of the pumping well) of the well this was abandoned. Instead a short pre-pumping test lasting approximately 45 minutes was undertaken. Initially PW1 was pumped at a discharge rate of 0.5L/s (43.2m³/day); however by the end of the pre-pumping test the discharge rate was regulated down to 0.3L/s (25.9m³/day) which is the estimated long-term sustainable yield of the well.

1.4 PW1 - PUMPING TEST RESULTS

The 72 hour pumping test in well PW1 was initiated at 09:00 on 11th December 2012. Starting water levels recorded in the pumping well and observation wells prior to the initiation of the pumping test are summarised in Table B below. The water levels for the observation wells and PW1 shown in Table B are not static water levels as the production well was developed for a period of 1 to 2 hours on 10th December 2012. In addition the 45 minute pre-pumping test was also completed on this date. The well development and pre-pumping test appear to have lowered the water levels in the observation wells prior to the initiation of the 72 hour pumping test on 11th December 2012. This was indicated by the excess recovery noted in a number of the monitoring wells.

Table B. Starting Water levels recorded prior to initiation of pumping test.

Well ID	Water Level (mAOD)*	Water Level (mbdl)
PW1	To be updated	4.0
MW03	To be updated	6.97
MW06	To be updated	5.52
MW07	To be updated	5.09
MW08	To be updated	7.58
MW10	To be updated	8.80

mAOD - meters above Ordnance Datum Malin Head
mbdl – meters below datum level

The pumping rate remained relatively constant throughout the 72 hour test, but did show some decline falling from an initial rate of 0.3L/s (25.92m³/day) to a rate of 0.26L/s (22.44m³/day) towards the end of the test. Discharge measurement recordings are shown in Appendix I.

The water level recovery in the pumping well was only monitored for a period of 2 hours after the pumping test due to a requirement that the submersible pump had to be removed on completion of the pumping test. The water level recovery in the observation wells (i.e. by means of data loggers only) was monitored for a period of 72 hours after the pumping test.

A drawdown and recovery plot for PW1 is shown as Figure 2 and a combined plot of drawdown and recovery for observations wells MW03, MW06, MW07, MW08 and MW10 is shown as Figure 3. Water level data recorded during the pumping test are presented in Appendix II. The corrected data have been compared and adjusted to manual dip data to ensure that the data provided in the appendices are correct and internally and externally consistent. Maximum drawdown data recorded during the pumping test are summarised in Table C.

The recovery plots show that some of the observation wells (i.e. MW03 and MW07) recovered to a higher level than the starting water level shown in Table B. This is likely due to the effect of the production well development lowering the water table prior to the initiation of the pumping test. Also, rainfall recharge prior to and during the pumping test may also be a factor. The recovery plots also indicate that there might be an external influence, such as a pumping well, in the vicinity of the site that is affecting the water levels in the observation wells.

Table C: Maximum drawdown recorded during pumping test.

Well ID	Drawdown (m)	Water Level (mbdl)	Distance from pumping well (m)
PW1	13.699	17.699	To be updated
MW03	0.614	7.584	To be updated
MW06	0.173	5.693	To be updated
MW07	0.319	5.409	To be updated
MW08	0.653	8.233	To be updated
MW10	0.287	9.087	To be updated

1.5 HYDROCHEMISTRY

Field hydrochemistry (i.e. Temperature, Electrical Conductivity and pH) of the discharge water were recorded at the well head using a calibrated YSI 556 multi-meter probe and flow through cell. These data are shown in Table D below.

Table D: Field Hydrochemistry Data.

Date	Time	Electrical Conductivity ($\mu\text{S}/\text{cm}$)	Temperature ($^{\circ}\text{C}$)	pH [H^+ ion]	Visual
11/12/2012	09:45	970	11.4	8.5	Cloudy/silty
11/12/2012	15:20	980	11.3	7.6	Cloudy/silty
11/12/2012	16:45	977	10.9	7.3	Cloudy/silty
12/12/2012	08:15	984	11.3	7.5	Cloudy/silty
12/12/2012	16:34	991	11.9	7.6	Cloudy/silty
13/12/2012	08:15	988	11.7	7.7	Cloudy/silty
13/12/2012	18:40	992	11.8	7.7	Cloudy/silty
14/12/2012	09:02	994	12.0	7.7	Clearing

2.0 REFERENCES

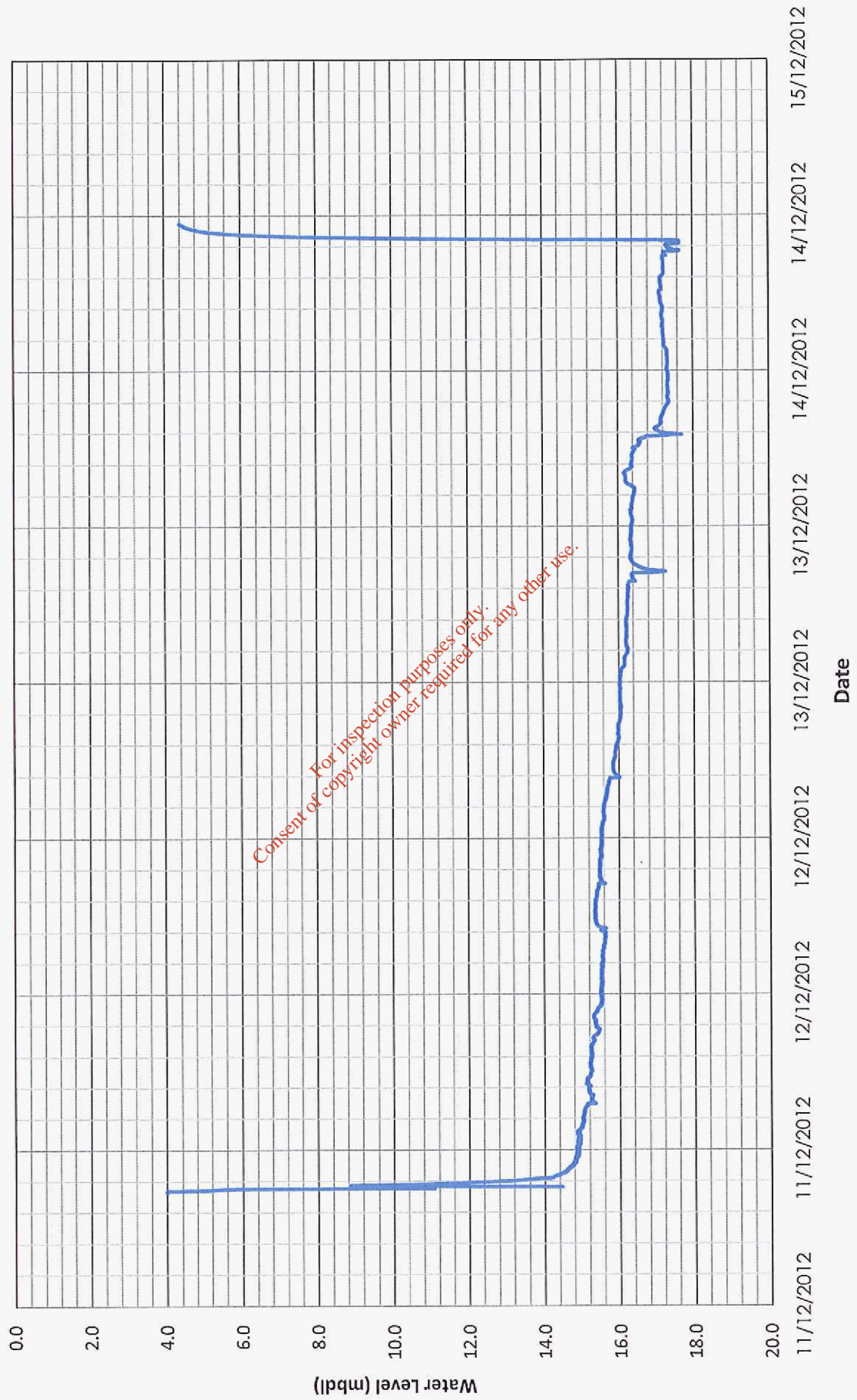
British Standards Institution	1992	BS6316 - Code of Practice for Test Pumping of Water Wells.
British Standards Institution	1999	BS5930 - Code of Practice for Site Investigations.
British Standards Institution	2003	BS ISO14686:2003 - Hydrometric determinations — Pumping tests for water wells — Considerations and guidelines for design, performance and use.
Wright, G.R. - Geological Survey of Ireland Information Circular 85/2,	1985	Pumping Tests: A guide to the testing of water wells for public, industrial, and farm supplies.

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FIGURES

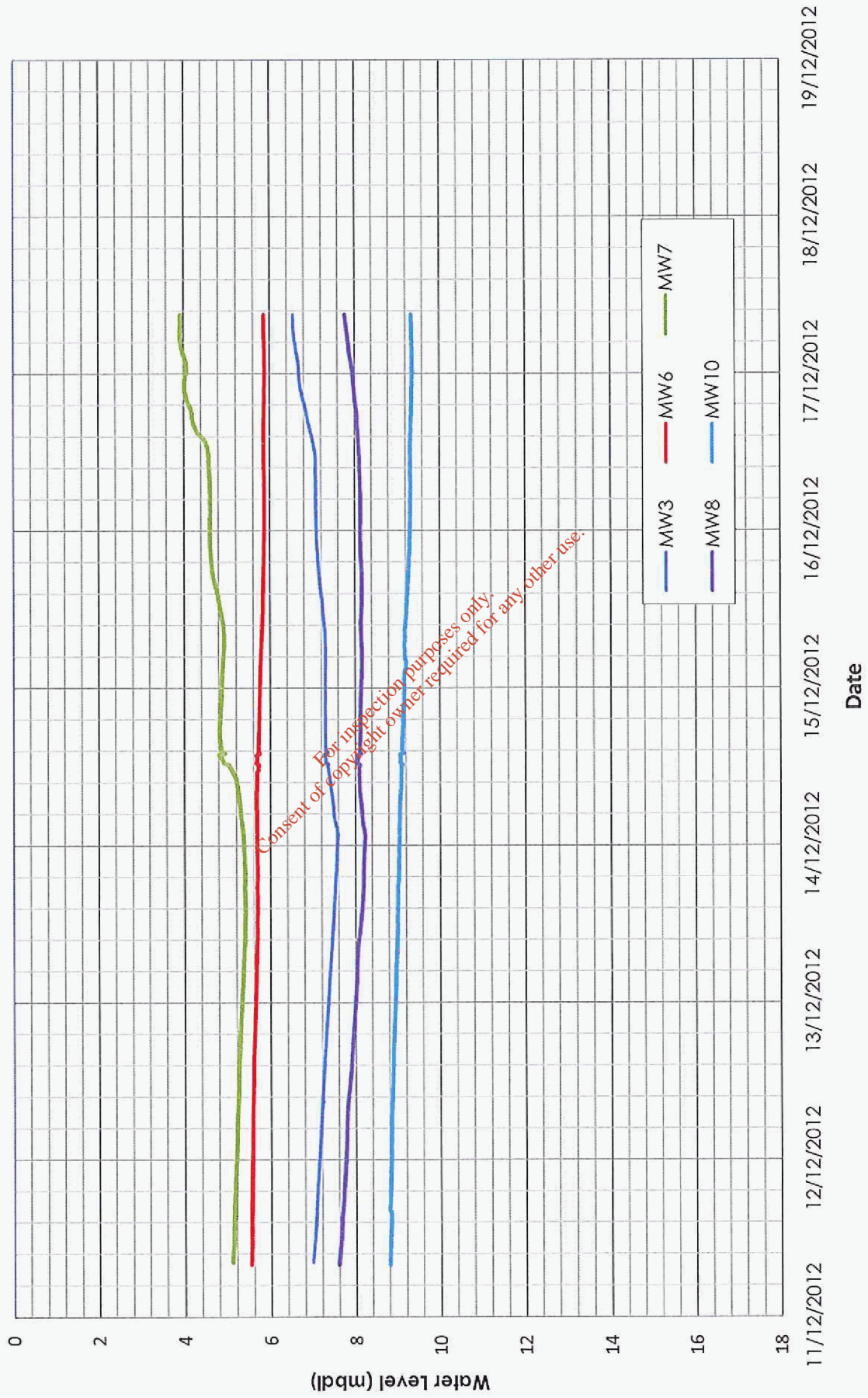
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Figure 2: Drawdown & Recovery in PW1



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Figure 3: Drawdown & Recovery in Observation Wells



APPENDIX I PW1 DISCHARGE DATA

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Date / Time	m3/day
11/12/2012 09:10	25.920
11/12/2012 09:12	25.920
11/12/2012 09:15	21.600
11/12/2012 09:20	22.464
11/12/2012 09:21	23.328
11/12/2012 09:22	24.192
11/12/2012 09:50	24.192
11/12/2012 10:19	23.328
11/12/2012 10:30	23.328
11/12/2012 10:40	23.328
11/12/2012 10:50	24.192
11/12/2012 11:00	24.192
11/12/2012 11:10	23.328
11/12/2012 11:20	23.328
11/12/2012 11:30	24.192
11/12/2012 11:40	24.192
11/12/2012 11:50	24.192
11/12/2012 12:00	24.192
11/12/2012 12:10	24.192
11/12/2012 12:20	24.192
11/12/2012 12:32	24.192
11/12/2012 12:40	24.192
11/12/2012 12:50	24.192
11/12/2012 13:00	24.192
11/12/2012 13:10	24.192
11/12/2012 13:20	24.192
11/12/2012 13:30	23.328
11/12/2012 14:10	23.328
11/12/2012 15:20	23.328
11/12/2012 16:40	24.192
11/12/2012 20:30	23.328
12/12/2012 08:15	24.192
12/12/2012 16:29	23.328
13/12/2012 07:36	24.192
13/12/2012 18:37	23.328
14/12/2012 08:56	23.328
14/12/2012 09:55	22.464

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**APPENDIX II
ALL PUMPING TEST WATER LEVEL DATA**

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Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
11/12/2012 08:45	4.000	11/12/2012 13:25	14.868	11/12/2012 18:00	15.243
11/12/2012 08:50	3.994	11/12/2012 13:30	14.920	11/12/2012 18:05	15.271
11/12/2012 08:55	5.089	11/12/2012 13:35	14.941	11/12/2012 18:10	15.253
11/12/2012 09:00	5.565	11/12/2012 13:40	14.978	11/12/2012 18:15	15.227
11/12/2012 09:10	13.430	11/12/2012 13:45	15.001	11/12/2012 18:20	15.219
11/12/2012 09:15	9.807	11/12/2012 13:50	14.971	11/12/2012 18:25	15.228
11/12/2012 09:20	10.296	11/12/2012 13:55	14.980	11/12/2012 18:30	15.235
11/12/2012 09:25	11.464	11/12/2012 14:00	15.013	11/12/2012 18:35	15.216
11/12/2012 09:30	12.070	11/12/2012 14:05	15.004	11/12/2012 18:40	15.223
11/12/2012 09:35	12.798	11/12/2012 14:10	15.039	11/12/2012 18:45	15.215
11/12/2012 09:40	13.347	11/12/2012 14:15	15.021	11/12/2012 18:50	15.235
11/12/2012 09:45	13.686	11/12/2012 14:20	15.030	11/12/2012 18:55	15.215
11/12/2012 09:50	14.175	11/12/2012 14:25	15.021	11/12/2012 19:00	15.232
11/12/2012 09:55	14.223	11/12/2012 14:30	15.010	11/12/2012 19:05	15.250
11/12/2012 10:00	14.291	11/12/2012 14:35	15.017	11/12/2012 19:10	15.260
11/12/2012 10:05	14.399	11/12/2012 14:40	15.036	11/12/2012 19:15	15.262
11/12/2012 10:10	14.425	11/12/2012 14:45	15.055	11/12/2012 19:20	15.271
11/12/2012 10:15	14.480	11/12/2012 14:50	15.041	11/12/2012 19:25	15.239
11/12/2012 10:20	14.576	11/12/2012 14:55	15.050	11/12/2012 19:30	15.251
11/12/2012 10:25	14.587	11/12/2012 15:00	15.067	11/12/2012 19:35	15.261
11/12/2012 10:30	14.618	11/12/2012 15:05	15.074	11/12/2012 19:40	15.257
11/12/2012 10:35	14.662	11/12/2012 15:10	15.087	11/12/2012 19:45	15.248
11/12/2012 10:40	14.651	11/12/2012 15:15	15.075	11/12/2012 19:50	15.244
11/12/2012 10:45	14.723	11/12/2012 15:20	15.117	11/12/2012 19:55	15.236
11/12/2012 10:50	14.752	11/12/2012 15:25	15.127	11/12/2012 20:00	15.244
11/12/2012 10:55	14.743	11/12/2012 15:30	15.140	11/12/2012 20:05	15.267
11/12/2012 11:00	14.820	11/12/2012 15:35	15.349	11/12/2012 20:10	15.278
11/12/2012 11:05	14.815	11/12/2012 15:40	15.263	11/12/2012 20:15	15.285
11/12/2012 11:10	14.808	11/12/2012 15:45	15.241	11/12/2012 20:20	15.303
11/12/2012 11:15	14.797	11/12/2012 15:50	15.266	11/12/2012 20:25	15.330
11/12/2012 11:20	14.827	11/12/2012 15:55	15.250	11/12/2012 20:30	15.323
11/12/2012 11:25	14.813	11/12/2012 16:00	15.244	11/12/2012 20:35	15.284
11/12/2012 11:30	14.821	11/12/2012 16:05	15.250	11/12/2012 20:40	15.291
11/12/2012 11:35	14.846	11/12/2012 16:10	15.271	11/12/2012 20:45	15.308
11/12/2012 11:40	14.898	11/12/2012 16:15	15.285	11/12/2012 20:50	15.372
11/12/2012 11:45	14.893	11/12/2012 16:20	15.219	11/12/2012 20:55	15.389
11/12/2012 11:50	14.885	11/12/2012 16:25	15.192	11/12/2012 21:00	15.425
11/12/2012 11:55	14.907	11/12/2012 16:30	15.199	11/12/2012 21:05	15.425
11/12/2012 12:00	14.857	11/12/2012 16:35	15.167	11/12/2012 21:10	15.452
11/12/2012 12:05	14.899	11/12/2012 16:40	15.177	11/12/2012 21:15	15.446
11/12/2012 12:10	14.898	11/12/2012 16:45	15.163	11/12/2012 21:20	15.441
11/12/2012 12:15	14.880	11/12/2012 16:50	15.180	11/12/2012 21:25	15.407
11/12/2012 12:20	14.900	11/12/2012 16:55	15.211	11/12/2012 21:30	15.388
11/12/2012 12:25	14.927	11/12/2012 17:00	15.151	11/12/2012 21:35	15.388
11/12/2012 12:30	14.943	11/12/2012 17:05	15.097	11/12/2012 21:40	15.368
11/12/2012 12:35	14.903	11/12/2012 17:10	15.131	11/12/2012 21:45	15.361
11/12/2012 12:40	14.893	11/12/2012 17:15	15.125	11/12/2012 21:50	15.349
11/12/2012 12:45	14.927	11/12/2012 17:20	15.115	11/12/2012 21:55	15.367
11/12/2012 12:50	14.933	11/12/2012 17:25	15.139	11/12/2012 22:00	15.369
11/12/2012 12:55	14.948	11/12/2012 17:30	15.134	11/12/2012 22:05	15.337
11/12/2012 13:00	14.896	11/12/2012 17:35	15.159	11/12/2012 22:10	15.307
11/12/2012 13:05	14.952	11/12/2012 17:40	15.191	11/12/2012 22:15	15.306
11/12/2012 13:10	14.917	11/12/2012 17:45	15.224	11/12/2012 22:20	15.301
11/12/2012 13:15	14.913	11/12/2012 17:50	15.229	11/12/2012 22:25	15.311
11/12/2012 13:20	14.902	11/12/2012 17:55	15.221	11/12/2012 22:30	15.351

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
11/12/2012 22:35	15.381	12/12/2012 03:10	15.566	12/12/2012 07:45	15.415
11/12/2012 22:40	15.406	12/12/2012 03:15	15.556	12/12/2012 07:50	15.415
11/12/2012 22:45	15.415	12/12/2012 03:20	15.547	12/12/2012 07:55	15.415
11/12/2012 22:50	15.408	12/12/2012 03:25	15.564	12/12/2012 08:00	15.420
11/12/2012 22:55	15.438	12/12/2012 03:30	15.579	12/12/2012 08:05	15.448
11/12/2012 23:00	15.456	12/12/2012 03:35	15.581	12/12/2012 08:10	15.440
11/12/2012 23:05	15.476	12/12/2012 03:40	15.574	12/12/2012 08:15	15.452
11/12/2012 23:10	15.496	12/12/2012 03:45	15.570	12/12/2012 08:20	15.452
11/12/2012 23:15	15.497	12/12/2012 03:50	15.605	12/12/2012 08:25	15.451
11/12/2012 23:20	15.514	12/12/2012 03:55	15.610	12/12/2012 08:30	15.619
11/12/2012 23:25	15.527	12/12/2012 04:00	15.609	12/12/2012 08:35	15.553
11/12/2012 23:30	15.532	12/12/2012 04:05	15.616	12/12/2012 08:40	15.527
11/12/2012 23:35	15.532	12/12/2012 04:10	15.618	12/12/2012 08:45	15.525
11/12/2012 23:40	15.526	12/12/2012 04:15	15.606	12/12/2012 08:50	15.512
11/12/2012 23:45	15.514	12/12/2012 04:20	15.617	12/12/2012 08:55	15.505
11/12/2012 23:50	15.510	12/12/2012 04:25	15.632	12/12/2012 09:00	15.502
11/12/2012 23:55	15.517	12/12/2012 04:30	15.627	12/12/2012 09:05	15.480
12/12/2012 00:00	15.505	12/12/2012 04:35	15.608	12/12/2012 09:10	15.494
12/12/2012 00:05	15.505	12/12/2012 04:40	15.610	12/12/2012 09:15	15.491
12/12/2012 00:10	15.503	12/12/2012 04:45	15.612	12/12/2012 09:20	15.491
12/12/2012 00:15	15.498	12/12/2012 04:50	15.542	12/12/2012 09:25	15.494
12/12/2012 00:20	15.507	12/12/2012 04:55	15.511	12/12/2012 09:30	15.493
12/12/2012 00:25	15.515	12/12/2012 05:00	15.547	12/12/2012 09:35	15.497
12/12/2012 00:30	15.514	12/12/2012 05:05	15.619	12/12/2012 09:40	15.499
12/12/2012 00:35	15.520	12/12/2012 05:10	15.488	12/12/2012 09:45	15.494
12/12/2012 00:40	15.523	12/12/2012 05:15	15.440	12/12/2012 09:50	15.502
12/12/2012 00:45	15.525	12/12/2012 05:20	15.414	12/12/2012 09:55	15.496
12/12/2012 00:50	15.526	12/12/2012 05:25	15.392	12/12/2012 10:00	15.501
12/12/2012 00:55	15.523	12/12/2012 05:30	15.371	12/12/2012 10:05	15.490
12/12/2012 01:00	15.535	12/12/2012 05:35	15.379	12/12/2012 10:10	15.505
12/12/2012 01:05	15.534	12/12/2012 05:40	15.378	12/12/2012 10:15	15.495
12/12/2012 01:10	15.530	12/12/2012 05:45	15.367	12/12/2012 10:20	15.495
12/12/2012 01:15	15.513	12/12/2012 05:50	15.354	12/12/2012 10:25	15.515
12/12/2012 01:20	15.525	12/12/2012 05:55	15.374	12/12/2012 10:30	15.518
12/12/2012 01:25	15.516	12/12/2012 06:00	15.365	12/12/2012 10:35	15.513
12/12/2012 01:30	15.526	12/12/2012 06:05	15.353	12/12/2012 10:40	15.523
12/12/2012 01:35	15.522	12/12/2012 06:10	15.384	12/12/2012 10:45	15.516
12/12/2012 01:40	15.521	12/12/2012 06:15	15.365	12/12/2012 10:50	15.522
12/12/2012 01:45	15.521	12/12/2012 06:20	15.365	12/12/2012 10:55	15.523
12/12/2012 01:50	15.517	12/12/2012 06:25	15.355	12/12/2012 11:00	15.512
12/12/2012 01:55	15.539	12/12/2012 06:30	15.354	12/12/2012 11:05	15.500
12/12/2012 02:00	15.542	12/12/2012 06:35	15.377	12/12/2012 11:10	15.517
12/12/2012 02:05	15.531	12/12/2012 06:40	15.366	12/12/2012 11:15	15.519
12/12/2012 02:10	15.530	12/12/2012 06:45	15.371	12/12/2012 11:20	15.522
12/12/2012 02:15	15.533	12/12/2012 06:50	15.372	12/12/2012 11:25	15.527
12/12/2012 02:20	15.529	12/12/2012 06:55	15.372	12/12/2012 11:30	15.539
12/12/2012 02:25	15.548	12/12/2012 07:00	15.364	12/12/2012 11:35	15.541
12/12/2012 02:30	15.566	12/12/2012 07:05	15.365	12/12/2012 11:40	15.541
12/12/2012 02:35	15.558	12/12/2012 07:10	15.379	12/12/2012 11:45	15.539
12/12/2012 02:40	15.567	12/12/2012 07:15	15.386	12/12/2012 11:50	15.539
12/12/2012 02:45	15.550	12/12/2012 07:20	15.392	12/12/2012 11:55	15.529
12/12/2012 02:50	15.559	12/12/2012 07:25	15.396	12/12/2012 12:00	15.542
12/12/2012 02:55	15.541	12/12/2012 07:30	15.397	12/12/2012 12:05	15.544
12/12/2012 03:00	15.552	12/12/2012 07:35	15.401	12/12/2012 12:10	15.533
12/12/2012 03:05	15.549	12/12/2012 07:40	15.391	12/12/2012 12:15	15.551

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
12/12/2012 12:20	15.543	12/12/2012 16:55	15.916	12/12/2012 21:30	16.047
12/12/2012 12:25	15.540	12/12/2012 17:00	15.893	12/12/2012 21:35	16.052
12/12/2012 12:30	15.527	12/12/2012 17:05	15.870	12/12/2012 21:40	16.044
12/12/2012 12:35	15.533	12/12/2012 17:10	15.861	12/12/2012 21:45	16.049
12/12/2012 12:40	15.525	12/12/2012 17:15	15.851	12/12/2012 21:50	16.048
12/12/2012 12:45	15.534	12/12/2012 17:20	15.856	12/12/2012 21:55	16.051
12/12/2012 12:50	15.543	12/12/2012 17:25	15.845	12/12/2012 22:00	16.069
12/12/2012 12:55	15.555	12/12/2012 17:30	15.847	12/12/2012 22:05	16.073
12/12/2012 13:00	15.557	12/12/2012 17:35	15.847	12/12/2012 22:10	16.058
12/12/2012 13:05	15.554	12/12/2012 17:40	15.855	12/12/2012 22:15	16.061
12/12/2012 13:10	15.573	12/12/2012 17:45	15.842	12/12/2012 22:20	16.052
12/12/2012 13:15	15.567	12/12/2012 17:50	15.847	12/12/2012 22:25	16.042
12/12/2012 13:20	15.596	12/12/2012 17:55	15.854	12/12/2012 22:30	16.046
12/12/2012 13:25	15.596	12/12/2012 18:00	15.874	12/12/2012 22:35	16.044
12/12/2012 13:30	15.600	12/12/2012 18:05	15.880	12/12/2012 22:40	16.039
12/12/2012 13:35	15.605	12/12/2012 18:10	15.883	12/12/2012 22:45	16.046
12/12/2012 13:40	15.594	12/12/2012 18:15	15.893	12/12/2012 22:50	16.038
12/12/2012 13:45	15.597	12/12/2012 18:20	15.901	12/12/2012 22:55	16.033
12/12/2012 13:50	15.592	12/12/2012 18:25	15.910	12/12/2012 23:00	16.037
12/12/2012 13:55	15.582	12/12/2012 18:30	15.895	12/12/2012 23:05	16.032
12/12/2012 14:00	15.589	12/12/2012 18:35	15.894	12/12/2012 23:10	16.043
12/12/2012 14:05	15.585	12/12/2012 18:40	15.912	12/12/2012 23:15	16.034
12/12/2012 14:10	15.589	12/12/2012 18:45	15.910	12/12/2012 23:20	16.042
12/12/2012 14:15	15.593	12/12/2012 18:50	15.923	12/12/2012 23:25	16.043
12/12/2012 14:20	15.601	12/12/2012 18:55	15.919	12/12/2012 23:30	16.056
12/12/2012 14:25	15.593	12/12/2012 19:00	15.927	12/12/2012 23:35	16.035
12/12/2012 14:30	15.597	12/12/2012 19:05	15.933	12/12/2012 23:40	16.026
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12/12/2012 15:35	15.689	12/12/2012 20:10	15.990	13/12/2012 00:45	16.060
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12/12/2012 15:45	15.681	12/12/2012 20:20	15.990	13/12/2012 00:55	16.068
12/12/2012 15:50	15.686	12/12/2012 20:25	15.989	13/12/2012 01:00	16.083
12/12/2012 15:55	15.691	12/12/2012 20:30	15.986	13/12/2012 01:05	16.095
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12/12/2012 16:10	15.722	12/12/2012 20:45	15.986	13/12/2012 01:20	16.177
12/12/2012 16:15	15.733	12/12/2012 20:50	16.008	13/12/2012 01:25	16.173
12/12/2012 16:20	15.746	12/12/2012 20:55	16.025	13/12/2012 01:30	16.166
12/12/2012 16:25	15.737	12/12/2012 21:00	16.024	13/12/2012 01:35	16.165
12/12/2012 16:30	15.748	12/12/2012 21:05	16.033	13/12/2012 01:40	16.161
12/12/2012 16:35	15.762	12/12/2012 21:10	16.041	13/12/2012 01:45	16.173
12/12/2012 16:40	15.992	12/12/2012 21:15	16.048	13/12/2012 01:50	16.160
12/12/2012 16:45	15.979	12/12/2012 21:20	16.047	13/12/2012 01:55	16.176
12/12/2012 16:50	15.935	12/12/2012 21:25	16.058	13/12/2012 02:00	16.186

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13/12/2012 02:20	16.257	13/12/2012 06:55	16.265	13/12/2012 11:30	16.357
13/12/2012 02:25	16.256	13/12/2012 07:00	16.274	13/12/2012 11:35	16.363
13/12/2012 02:30	16.241	13/12/2012 07:05	16.256	13/12/2012 11:40	16.351
13/12/2012 02:35	16.256	13/12/2012 07:10	16.258	13/12/2012 11:45	16.359
13/12/2012 02:40	16.243	13/12/2012 07:15	16.267	13/12/2012 11:50	16.361
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13/12/2012 02:50	16.216	13/12/2012 07:25	16.273	13/12/2012 12:00	16.360
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13/12/2012 03:05	16.215	13/12/2012 07:40	16.294	13/12/2012 12:15	16.372
13/12/2012 03:10	16.198	13/12/2012 07:45	16.301	13/12/2012 12:20	16.378
13/12/2012 03:15	16.205	13/12/2012 07:50	16.431	13/12/2012 12:25	16.389
13/12/2012 03:20	16.206	13/12/2012 07:55	16.394	13/12/2012 12:30	16.390
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13/12/2012 03:35	16.221	13/12/2012 08:10	16.371	13/12/2012 12:45	16.369
13/12/2012 03:40	16.221	13/12/2012 08:15	16.359	13/12/2012 12:50	16.349
13/12/2012 03:45	16.216	13/12/2012 08:20	16.389	13/12/2012 12:55	16.341
13/12/2012 03:50	16.222	13/12/2012 08:25	16.728	13/12/2012 13:00	16.345
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13/12/2012 04:10	16.216	13/12/2012 08:45	16.682	13/12/2012 13:20	16.356
13/12/2012 04:15	16.221	13/12/2012 08:50	16.579	13/12/2012 13:25	16.376
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13/12/2012 04:55	16.219	13/12/2012 09:30	16.336	13/12/2012 14:05	16.385
13/12/2012 05:00	16.228	13/12/2012 09:35	16.317	13/12/2012 14:10	16.403
13/12/2012 05:05	16.236	13/12/2012 09:40	16.335	13/12/2012 14:15	16.401
13/12/2012 05:10	16.234	13/12/2012 09:45	16.328	13/12/2012 14:20	16.413
13/12/2012 05:15	16.241	13/12/2012 09:50	16.339	13/12/2012 14:25	16.421
13/12/2012 05:20	16.244	13/12/2012 09:55	16.348	13/12/2012 14:30	16.432
13/12/2012 05:25	16.246	13/12/2012 10:00	16.352	13/12/2012 14:35	16.436
13/12/2012 05:30	16.252	13/12/2012 10:05	16.362	13/12/2012 14:40	16.450
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13/12/2012 06:15	16.250	13/12/2012 10:50	16.343	13/12/2012 15:25	16.210
13/12/2012 06:20	16.252	13/12/2012 10:55	16.328	13/12/2012 15:30	16.199
13/12/2012 06:25	16.254	13/12/2012 11:00	16.328	13/12/2012 15:35	16.205
13/12/2012 06:30	16.261	13/12/2012 11:05	16.335	13/12/2012 15:40	16.212
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13/12/2012 17:10	16.382	13/12/2012 21:45	17.359	14/12/2012 02:20	17.237
13/12/2012 17:15	16.385	13/12/2012 21:50	17.336	14/12/2012 02:25	17.230
13/12/2012 17:20	16.381	13/12/2012 21:55	17.323	14/12/2012 02:30	17.217
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13/12/2012 18:45	16.628	13/12/2012 23:20	17.345	14/12/2012 03:55	17.203
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13/12/2012 18:55	16.766	13/12/2012 23:30	17.345	14/12/2012 04:05	17.184
13/12/2012 19:00	17.265	13/12/2012 23:35	17.335	14/12/2012 04:10	17.176
13/12/2012 19:05	17.545	13/12/2012 23:40	17.342	14/12/2012 04:15	17.170
13/12/2012 19:10	17.242	13/12/2012 23:45	17.339	14/12/2012 04:20	17.165
13/12/2012 19:15	17.136	13/12/2012 23:50	17.337	14/12/2012 04:25	17.177
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13/12/2012 20:00	17.157	14/12/2012 00:35	17.329	14/12/2012 05:10	17.148
13/12/2012 20:05	17.143	14/12/2012 00:40	17.334	14/12/2012 05:15	17.145
13/12/2012 20:10	17.142	14/12/2012 00:45	17.331	14/12/2012 05:20	17.142
13/12/2012 20:15	17.146	14/12/2012 00:50	17.331	14/12/2012 05:25	17.139
13/12/2012 20:20	17.147	14/12/2012 00:55	17.326	14/12/2012 05:30	17.131

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14/12/2012 05:50	17.115	14/12/2012 10:25	6.881		
14/12/2012 05:55	17.111	14/12/2012 10:30	6.181		
14/12/2012 06:00	17.104	14/12/2012 10:35	5.685		
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14/12/2012 06:10	17.121	14/12/2012 10:45	5.079		
14/12/2012 06:15	17.159	14/12/2012 10:50	4.900		
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14/12/2012 06:25	17.158	14/12/2012 11:00	4.660		
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14/12/2012 07:30	17.228				
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14/12/2012 08:45	17.209				
14/12/2012 08:50	17.205				
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14/12/2012 09:30	17.328				
14/12/2012 09:35	17.311				
14/12/2012 09:40	17.284				
14/12/2012 09:45	17.492				
14/12/2012 09:50	17.642				
14/12/2012 09:55	17.547				
14/12/2012 10:00	17.637				
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11/12/2012 08:50	6.979	11/12/2012 22:35	7.119	12/12/2012 12:20	7.24
11/12/2012 09:05	6.985	11/12/2012 22:50	7.122	12/12/2012 12:35	7.243
11/12/2012 09:20	6.989	11/12/2012 23:05	7.121	12/12/2012 12:50	7.241
11/12/2012 09:35	6.988	11/12/2012 23:20	7.126	12/12/2012 13:05	7.245
11/12/2012 09:50	6.993	11/12/2012 23:35	7.127	12/12/2012 13:20	7.246
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11/12/2012 16:50	7.066	12/12/2012 06:35	7.189	12/12/2012 20:20	7.312
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11/12/2012 17:35	7.069	12/12/2012 07:20	7.194	12/12/2012 21:05	7.318
11/12/2012 17:50	7.075	12/12/2012 07:35	7.195	12/12/2012 21:20	7.324
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11/12/2012 18:20	7.077	12/12/2012 08:05	7.205	12/12/2012 21:50	7.329
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11/12/2012 19:05	7.086	12/12/2012 08:50	7.241	12/12/2012 22:35	7.335
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11/12/2012 20:50	7.101	12/12/2012 10:35	7.219	13/12/2012 00:20	7.352
11/12/2012 21:05	7.101	12/12/2012 10:50	7.226	13/12/2012 00:35	7.354
11/12/2012 21:20	7.103	12/12/2012 11:05	7.226	13/12/2012 00:50	7.362
11/12/2012 21:35	7.109	12/12/2012 11:20	7.228	13/12/2012 01:05	7.362
11/12/2012 21:50	7.108	12/12/2012 11:35	7.23	13/12/2012 01:20	7.365

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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13/12/2012 02:05	7.372	13/12/2012 15:50	7.512	14/12/2012 05:35	7.488
13/12/2012 02:20	7.376	13/12/2012 16:05	7.506	14/12/2012 05:50	7.485
13/12/2012 02:35	7.376	13/12/2012 16:20	7.507	14/12/2012 06:05	7.481
13/12/2012 02:50	7.378	13/12/2012 16:35	7.513	14/12/2012 06:20	7.477
13/12/2012 03:05	7.382	13/12/2012 16:50	7.517	14/12/2012 06:35	7.475
13/12/2012 03:20	7.38	13/12/2012 17:05	7.517	14/12/2012 06:50	7.471
13/12/2012 03:35	7.383	13/12/2012 17:20	7.516	14/12/2012 07:05	7.464
13/12/2012 03:50	7.388	13/12/2012 17:35	7.521	14/12/2012 07:20	7.459
13/12/2012 04:05	7.39	13/12/2012 17:50	7.515	14/12/2012 07:35	7.448
13/12/2012 04:20	7.397	13/12/2012 18:05	7.522	14/12/2012 07:50	7.446
13/12/2012 04:35	7.391	13/12/2012 18:20	7.526	14/12/2012 08:05	7.438
13/12/2012 04:50	7.4	13/12/2012 18:35	7.529	14/12/2012 08:20	7.438
13/12/2012 05:05	7.4	13/12/2012 18:50	7.532	14/12/2012 08:35	7.426
13/12/2012 05:20	7.406	13/12/2012 19:05	7.533	14/12/2012 08:50	7.424
13/12/2012 05:35	7.406	13/12/2012 19:20	7.536	14/12/2012 09:05	7.421
13/12/2012 05:50	7.408	13/12/2012 19:35	7.541	14/12/2012 09:20	7.416
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13/12/2012 06:20	7.413	13/12/2012 20:05	7.546	14/12/2012 09:50	7.406
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13/12/2012 06:50	7.418	13/12/2012 20:35	7.548	14/12/2012 10:20	7.397
13/12/2012 07:05	7.424	13/12/2012 20:50	7.546	14/12/2012 10:35	7.39
13/12/2012 07:20	7.426	13/12/2012 21:05	7.55	14/12/2012 10:50	7.382
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13/12/2012 07:50	7.43	13/12/2012 21:35	7.558	14/12/2012 11:20	7.372
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13/12/2012 08:20	7.438	13/12/2012 22:05	7.558	14/12/2012 11:50	7.362
13/12/2012 08:35	7.44	13/12/2012 22:20	7.558	14/12/2012 12:05	7.349
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13/12/2012 09:05	7.44	13/12/2012 22:50	7.559	14/12/2012 12:35	7.312
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13/12/2012 09:50	7.446	13/12/2012 23:35	7.565	14/12/2012 13:20	7.298
13/12/2012 10:05	7.452	13/12/2012 23:50	7.567	14/12/2012 13:35	7.288
13/12/2012 10:20	7.456	14/12/2012 00:05	7.571	14/12/2012 13:50	7.272
13/12/2012 10:35	7.456	14/12/2012 00:20	7.572	14/12/2012 14:05	7.353
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13/12/2012 11:20	7.466	14/12/2012 01:05	7.577	14/12/2012 14:50	7.304
13/12/2012 11:35	7.466	14/12/2012 01:20	7.578	14/12/2012 15:05	7.303
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13/12/2012 12:05	7.474	14/12/2012 01:50	7.577	14/12/2012 15:35	7.301
13/12/2012 12:20	7.476	14/12/2012 02:05	7.576	14/12/2012 15:50	7.299
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13/12/2012 13:20	7.484	14/12/2012 03:05	7.544	14/12/2012 16:50	7.297
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13/12/2012 13:50	7.486	14/12/2012 03:35	7.525	14/12/2012 17:20	7.293
13/12/2012 14:05	7.494	14/12/2012 03:50	7.515	14/12/2012 17:35	7.291
13/12/2012 14:20	7.497	14/12/2012 04:05	7.51	14/12/2012 17:50	7.292
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14/12/2012 19:50	7.294	15/12/2012 09:35	7.275	15/12/2012 23:20	7.097
14/12/2012 20:05	7.289	15/12/2012 09:50	7.271	15/12/2012 23:35	7.093
14/12/2012 20:20	7.291	15/12/2012 10:05	7.269	15/12/2012 23:50	7.094
14/12/2012 20:35	7.293	15/12/2012 10:20	7.259	16/12/2012 00:05	7.089
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14/12/2012 21:20	7.29	15/12/2012 11:05	7.247	16/12/2012 00:50	7.084
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14/12/2012 22:05	7.294	15/12/2012 11:50	7.24	16/12/2012 01:35	7.083
14/12/2012 22:20	7.294	15/12/2012 12:05	7.237	16/12/2012 01:50	7.081
14/12/2012 22:35	7.291	15/12/2012 12:20	7.237	16/12/2012 02:05	7.083
14/12/2012 22:50	7.291	15/12/2012 12:35	7.232	16/12/2012 02:20	7.079
14/12/2012 23:05	7.294	15/12/2012 12:50	7.232	16/12/2012 02:35	7.078
14/12/2012 23:20	7.296	15/12/2012 13:05	7.231	16/12/2012 02:50	7.08
14/12/2012 23:35	7.296	15/12/2012 13:20	7.222	16/12/2012 03:05	7.081
14/12/2012 23:50	7.298	15/12/2012 13:35	7.22	16/12/2012 03:20	7.08
15/12/2012 00:05	7.294	15/12/2012 13:50	7.209	16/12/2012 03:35	7.075
15/12/2012 00:20	7.293	15/12/2012 14:05	7.207	16/12/2012 03:50	7.081
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15/12/2012 01:05	7.296	15/12/2012 14:50	7.193	16/12/2012 04:35	7.077
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15/12/2012 02:35	7.298	15/12/2012 16:20	7.159	16/12/2012 06:05	7.081
15/12/2012 02:50	7.297	15/12/2012 16:35	7.156	16/12/2012 06:20	7.079
15/12/2012 03:05	7.302	15/12/2012 16:50	7.157	16/12/2012 06:35	7.079
15/12/2012 03:20	7.296	15/12/2012 17:05	7.151	16/12/2012 06:50	7.075
15/12/2012 03:35	7.3	15/12/2012 17:20	7.147	16/12/2012 07:05	7.077
15/12/2012 03:50	7.296	15/12/2012 17:35	7.149	16/12/2012 07:20	7.071
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15/12/2012 04:20	7.301	15/12/2012 18:05	7.139	16/12/2012 07:50	7.075
15/12/2012 04:35	7.301	15/12/2012 18:20	7.135	16/12/2012 08:05	7.075
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15/12/2012 05:05	7.301	15/12/2012 18:50	7.135	16/12/2012 08:35	7.07
15/12/2012 05:20	7.3	15/12/2012 19:05	7.131	16/12/2012 08:50	7.071
15/12/2012 05:35	7.303	15/12/2012 19:20	7.125	16/12/2012 09:05	7.064
15/12/2012 05:50	7.3	15/12/2012 19:35	7.121	16/12/2012 09:20	7.068
15/12/2012 06:05	7.303	15/12/2012 19:50	7.121	16/12/2012 09:35	7.067
15/12/2012 06:20	7.294	15/12/2012 20:05	7.115	16/12/2012 09:50	7.073
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15/12/2012 08:05	7.285	15/12/2012 21:50	7.105	16/12/2012 11:35	7.066
15/12/2012 08:20	7.29	15/12/2012 22:05	7.101	16/12/2012 11:50	7.063

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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16/12/2012 13:05	7.026				
16/12/2012 13:20	7.018				
16/12/2012 13:35	7.008				
16/12/2012 13:50	7.004				
16/12/2012 14:05	6.995				
16/12/2012 14:20	6.987				
16/12/2012 14:35	6.98				
16/12/2012 14:50	6.969				
16/12/2012 15:05	6.961				
16/12/2012 15:20	6.951				
16/12/2012 15:35	6.941				
16/12/2012 15:50	6.926				
16/12/2012 16:05	6.923				
16/12/2012 16:20	6.911				
16/12/2012 16:35	6.904				
16/12/2012 16:50	6.89				
16/12/2012 17:05	6.884				
16/12/2012 17:20	6.876				
16/12/2012 17:35	6.868				
16/12/2012 17:50	6.86				
16/12/2012 18:05	6.855				
16/12/2012 18:20	6.848				
16/12/2012 18:35	6.84				
16/12/2012 18:50	6.832				
16/12/2012 19:05	6.824				
16/12/2012 19:20	6.81				
16/12/2012 19:35	6.802				
16/12/2012 19:50	6.792				
16/12/2012 20:05	6.781				
16/12/2012 20:20	6.775				
16/12/2012 20:35	6.759				
16/12/2012 20:50	6.753				
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16/12/2012 21:20	6.731				
16/12/2012 21:35	6.725				
16/12/2012 21:50	6.719				
16/12/2012 22:05	6.713				
16/12/2012 22:20	6.713				
16/12/2012 22:35	6.707				
16/12/2012 22:50	6.699				
16/12/2012 23:05	6.697				
16/12/2012 23:20	6.693				
16/12/2012 23:35	6.689				
16/12/2012 23:50	6.695				
17/12/2012 00:05	6.693				

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Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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11/12/2012 08:30	5.522	11/12/2012 22:15	5.552	12/12/2012 12:00	5.590
11/12/2012 08:45	5.524	11/12/2012 22:30	5.553	12/12/2012 12:15	5.590
11/12/2012 09:00	5.525	11/12/2012 22:45	5.554	12/12/2012 12:30	5.593
11/12/2012 09:15	5.526	11/12/2012 23:00	5.555	12/12/2012 12:45	5.592
11/12/2012 09:30	5.527	11/12/2012 23:15	5.555	12/12/2012 13:00	5.592
11/12/2012 09:45	5.527	11/12/2012 23:30	5.555	12/12/2012 13:15	5.592
11/12/2012 10:00	5.528	11/12/2012 23:45	5.557	12/12/2012 13:30	5.592
11/12/2012 10:15	5.530	12/12/2012 00:00	5.559	12/12/2012 13:45	5.592
11/12/2012 10:30	5.530	12/12/2012 00:15	5.560	12/12/2012 14:00	5.594
11/12/2012 10:45	5.532	12/12/2012 00:30	5.560	12/12/2012 14:15	5.593
11/12/2012 11:00	5.532	12/12/2012 00:45	5.561	12/12/2012 14:30	5.593
11/12/2012 11:15	5.533	12/12/2012 01:00	5.561	12/12/2012 14:45	5.594
11/12/2012 11:30	5.532	12/12/2012 01:15	5.562	12/12/2012 15:00	5.595
11/12/2012 11:45	5.534	12/12/2012 01:30	5.562	12/12/2012 15:15	5.595
11/12/2012 12:00	5.531	12/12/2012 01:45	5.563	12/12/2012 15:30	5.598
11/12/2012 12:15	5.531	12/12/2012 02:00	5.563	12/12/2012 15:45	5.600
11/12/2012 12:30	5.531	12/12/2012 02:15	5.563	12/12/2012 16:00	5.600
11/12/2012 12:45	5.530	12/12/2012 02:30	5.565	12/12/2012 16:15	5.602
11/12/2012 13:00	5.530	12/12/2012 02:45	5.564	12/12/2012 16:30	5.604
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11/12/2012 13:30	5.531	12/12/2012 03:15	5.566	12/12/2012 17:00	5.606
11/12/2012 13:45	5.529	12/12/2012 03:30	5.567	12/12/2012 17:15	5.609
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11/12/2012 14:15	5.529	12/12/2012 04:00	5.566	12/12/2012 17:45	5.610
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11/12/2012 14:45	5.528	12/12/2012 04:30	5.568	12/12/2012 18:15	5.612
11/12/2012 15:00	5.531	12/12/2012 04:45	5.567	12/12/2012 18:30	5.614
11/12/2012 15:15	5.531	12/12/2012 05:00	5.567	12/12/2012 18:45	5.613
11/12/2012 15:30	5.532	12/12/2012 05:15	5.568	12/12/2012 19:00	5.615
11/12/2012 15:45	5.533	12/12/2012 05:30	5.569	12/12/2012 19:15	5.618
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11/12/2012 16:15	5.536	12/12/2012 06:00	5.569	12/12/2012 19:45	5.620
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11/12/2012 17:00	5.537	12/12/2012 06:45	5.572	12/12/2012 20:30	5.624
11/12/2012 17:15	5.538	12/12/2012 07:00	5.573	12/12/2012 20:45	5.625
11/12/2012 17:30	5.538	12/12/2012 07:15	5.574	12/12/2012 21:00	5.626
11/12/2012 17:45	5.538	12/12/2012 07:30	5.575	12/12/2012 21:15	5.627
11/12/2012 18:00	5.540	12/12/2012 07:45	5.577	12/12/2012 21:30	5.628
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11/12/2012 19:30	5.544	12/12/2012 09:15	5.582	12/12/2012 23:00	5.637
11/12/2012 19:45	5.546	12/12/2012 09:30	5.583	12/12/2012 23:15	5.639
11/12/2012 20:00	5.545	12/12/2012 09:45	5.584	12/12/2012 23:30	5.640
11/12/2012 20:15	5.546	12/12/2012 10:00	5.584	12/12/2012 23:45	5.642
11/12/2012 20:30	5.545	12/12/2012 10:15	5.587	13/12/2012 00:00	5.645
11/12/2012 20:45	5.547	12/12/2012 10:30	5.588	13/12/2012 00:15	5.645
11/12/2012 21:00	5.548	12/12/2012 10:45	5.588	13/12/2012 00:30	5.645
11/12/2012 21:15	5.549	12/12/2012 11:00	5.589	13/12/2012 00:45	5.648
11/12/2012 21:30	5.550	12/12/2012 11:15	5.590	13/12/2012 01:00	5.649

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
13/12/2012 01:15	5.650	13/12/2012 15:00	5.692	14/12/2012 04:45	5.680
13/12/2012 01:30	5.651	13/12/2012 15:15	5.692	14/12/2012 05:00	5.679
13/12/2012 01:45	5.652	13/12/2012 15:30	5.691	14/12/2012 05:15	5.680
13/12/2012 02:00	5.654	13/12/2012 15:45	5.693	14/12/2012 05:30	5.678
13/12/2012 02:15	5.654	13/12/2012 16:00	5.692	14/12/2012 05:45	5.677
13/12/2012 02:30	5.656	13/12/2012 16:15	5.691	14/12/2012 06:00	5.677
13/12/2012 02:45	5.657	13/12/2012 16:30	5.689	14/12/2012 06:15	5.676
13/12/2012 03:00	5.659	13/12/2012 16:45	5.689	14/12/2012 06:30	5.676
13/12/2012 03:15	5.659	13/12/2012 17:00	5.688	14/12/2012 06:45	5.675
13/12/2012 03:30	5.661	13/12/2012 17:15	5.685	14/12/2012 07:00	5.675
13/12/2012 03:45	5.659	13/12/2012 17:30	5.684	14/12/2012 07:15	5.676
13/12/2012 04:00	5.660	13/12/2012 17:45	5.684	14/12/2012 07:30	5.675
13/12/2012 04:15	5.662	13/12/2012 18:00	5.687	14/12/2012 07:45	5.676
13/12/2012 04:30	5.662	13/12/2012 18:15	5.688	14/12/2012 08:00	5.677
13/12/2012 04:45	5.662	13/12/2012 18:30	5.689	14/12/2012 08:15	5.679
13/12/2012 05:00	5.664	13/12/2012 18:45	5.691	14/12/2012 08:30	5.679
13/12/2012 05:15	5.664	13/12/2012 19:00	5.691	14/12/2012 08:45	5.681
13/12/2012 05:30	5.665	13/12/2012 19:15	5.691	14/12/2012 09:00	5.682
13/12/2012 05:45	5.663	13/12/2012 19:30	5.691	14/12/2012 09:15	5.683
13/12/2012 06:00	5.667	13/12/2012 19:45	5.692	14/12/2012 09:30	5.683
13/12/2012 06:15	5.669	13/12/2012 20:00	5.692	14/12/2012 09:45	5.685
13/12/2012 06:30	5.669	13/12/2012 20:15	5.691	14/12/2012 10:00	5.686
13/12/2012 06:45	5.670	13/12/2012 20:30	5.692	14/12/2012 10:15	5.686
13/12/2012 07:00	5.671	13/12/2012 20:45	5.689	14/12/2012 10:30	5.686
13/12/2012 07:15	5.673	13/12/2012 21:00	5.689	14/12/2012 10:45	5.684
13/12/2012 07:30	5.673	13/12/2012 21:15	5.689	14/12/2012 11:00	5.684
13/12/2012 07:45	5.674	13/12/2012 21:30	5.687	14/12/2012 11:15	5.686
13/12/2012 08:00	5.674	13/12/2012 21:45	5.688	14/12/2012 11:30	5.721
13/12/2012 08:15	5.676	13/12/2012 22:00	5.688	14/12/2012 11:45	5.713
13/12/2012 08:30	5.677	13/12/2012 22:15	5.688	14/12/2012 12:00	5.718
13/12/2012 08:45	5.678	13/12/2012 22:30	5.687	14/12/2012 12:15	5.736
13/12/2012 09:00	5.681	13/12/2012 22:45	5.686	14/12/2012 12:30	5.669
13/12/2012 09:15	5.682	13/12/2012 23:00	5.684	14/12/2012 12:45	5.681
13/12/2012 09:30	5.684	13/12/2012 23:15	5.686	14/12/2012 13:00	5.682
13/12/2012 09:45	5.685	13/12/2012 23:30	5.684	14/12/2012 13:15	5.688
13/12/2012 10:00	5.685	13/12/2012 23:45	5.684	14/12/2012 13:30	5.687
13/12/2012 10:15	5.686	14/12/2012 00:00	5.684	14/12/2012 13:45	5.670
13/12/2012 10:30	5.686	14/12/2012 00:15	5.686	14/12/2012 14:00	5.753
13/12/2012 10:45	5.686	14/12/2012 00:30	5.684	14/12/2012 14:15	5.716
13/12/2012 11:00	5.686	14/12/2012 00:45	5.685	14/12/2012 14:30	5.724
13/12/2012 11:15	5.685	14/12/2012 01:00	5.684	14/12/2012 14:45	5.722
13/12/2012 11:30	5.685	14/12/2012 01:15	5.683	14/12/2012 15:00	5.723
13/12/2012 11:45	5.684	14/12/2012 01:30	5.686	14/12/2012 15:15	5.723
13/12/2012 12:00	5.685	14/12/2012 01:45	5.685	14/12/2012 15:30	5.725
13/12/2012 12:15	5.685	14/12/2012 02:00	5.681	14/12/2012 15:45	5.725
13/12/2012 12:30	5.685	14/12/2012 02:15	5.681	14/12/2012 16:00	5.727
13/12/2012 12:45	5.686	14/12/2012 02:30	5.681	14/12/2012 16:15	5.728
13/12/2012 13:00	5.688	14/12/2012 02:45	5.679	14/12/2012 16:30	5.728
13/12/2012 13:15	5.689	14/12/2012 03:00	5.683	14/12/2012 16:45	5.728
13/12/2012 13:30	5.690	14/12/2012 03:15	5.680	14/12/2012 17:00	5.731
13/12/2012 13:45	5.691	14/12/2012 03:30	5.680	14/12/2012 17:15	5.732
13/12/2012 14:00	5.692	14/12/2012 03:45	5.680	14/12/2012 17:30	5.733
13/12/2012 14:15	5.691	14/12/2012 04:00	5.681	14/12/2012 17:45	5.735
13/12/2012 14:30	5.692	14/12/2012 04:15	5.681	14/12/2012 18:00	5.735
13/12/2012 14:45	5.690	14/12/2012 04:30	5.680	14/12/2012 18:15	5.736

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
14/12/2012 18:30	5.737	15/12/2012 08:15	5.806	15/12/2012 22:00	5.863
14/12/2012 18:45	5.738	15/12/2012 08:30	5.809	15/12/2012 22:15	5.863
14/12/2012 19:00	5.740	15/12/2012 08:45	5.809	15/12/2012 22:30	5.864
14/12/2012 19:15	5.741	15/12/2012 09:00	5.811	15/12/2012 22:45	5.865
14/12/2012 19:30	5.741	15/12/2012 09:15	5.813	15/12/2012 23:00	5.866
14/12/2012 19:45	5.743	15/12/2012 09:30	5.815	15/12/2012 23:15	5.866
14/12/2012 20:00	5.744	15/12/2012 09:45	5.817	15/12/2012 23:30	5.868
14/12/2012 20:15	5.746	15/12/2012 10:00	5.818	15/12/2012 23:45	5.868
14/12/2012 20:30	5.747	15/12/2012 10:15	5.819	16/12/2012 00:00	5.869
14/12/2012 20:45	5.746	15/12/2012 10:30	5.821	16/12/2012 00:15	5.871
14/12/2012 21:00	5.748	15/12/2012 10:45	5.824	16/12/2012 00:30	5.870
14/12/2012 21:15	5.750	15/12/2012 11:00	5.826	16/12/2012 00:45	5.870
14/12/2012 21:30	5.750	15/12/2012 11:15	5.826	16/12/2012 01:00	5.871
14/12/2012 21:45	5.751	15/12/2012 11:30	5.830	16/12/2012 01:15	5.871
14/12/2012 22:00	5.753	15/12/2012 11:45	5.830	16/12/2012 01:30	5.871
14/12/2012 22:15	5.754	15/12/2012 12:00	5.830	16/12/2012 01:45	5.872
14/12/2012 22:30	5.756	15/12/2012 12:15	5.831	16/12/2012 02:00	5.873
14/12/2012 22:45	5.757	15/12/2012 12:30	5.833	16/12/2012 02:15	5.873
14/12/2012 23:00	5.758	15/12/2012 12:45	5.833	16/12/2012 02:30	5.872
14/12/2012 23:15	5.758	15/12/2012 13:00	5.833	16/12/2012 02:45	5.873
14/12/2012 23:30	5.759	15/12/2012 13:15	5.833	16/12/2012 03:00	5.873
14/12/2012 23:45	5.761	15/12/2012 13:30	5.834	16/12/2012 03:15	5.873
15/12/2012 00:00	5.762	15/12/2012 13:45	5.835	16/12/2012 03:30	5.872
15/12/2012 00:15	5.762	15/12/2012 14:00	5.835	16/12/2012 03:45	5.872
15/12/2012 00:30	5.763	15/12/2012 14:15	5.835	16/12/2012 04:00	5.872
15/12/2012 00:45	5.764	15/12/2012 14:30	5.835	16/12/2012 04:15	5.871
15/12/2012 01:00	5.763	15/12/2012 14:45	5.837	16/12/2012 04:30	5.870
15/12/2012 01:15	5.765	15/12/2012 15:00	5.838	16/12/2012 04:45	5.870
15/12/2012 01:30	5.765	15/12/2012 15:15	5.839	16/12/2012 05:00	5.869
15/12/2012 01:45	5.767	15/12/2012 15:30	5.839	16/12/2012 05:15	5.870
15/12/2012 02:00	5.767	15/12/2012 15:45	5.840	16/12/2012 05:30	5.873
15/12/2012 02:15	5.769	15/12/2012 16:00	5.842	16/12/2012 05:45	5.871
15/12/2012 02:30	5.769	15/12/2012 16:15	5.841	16/12/2012 06:00	5.869
15/12/2012 02:45	5.770	15/12/2012 16:30	5.843	16/12/2012 06:15	5.870
15/12/2012 03:00	5.771	15/12/2012 16:45	5.844	16/12/2012 06:30	5.870
15/12/2012 03:15	5.772	15/12/2012 17:00	5.845	16/12/2012 06:45	5.869
15/12/2012 03:30	5.774	15/12/2012 17:15	5.847	16/12/2012 07:00	5.869
15/12/2012 03:45	5.775	15/12/2012 17:30	5.848	16/12/2012 07:15	5.869
15/12/2012 04:00	5.777	15/12/2012 17:45	5.848	16/12/2012 07:30	5.870
15/12/2012 04:15	5.779	15/12/2012 18:00	5.849	16/12/2012 07:45	5.869
15/12/2012 04:30	5.780	15/12/2012 18:15	5.851	16/12/2012 08:00	5.868
15/12/2012 04:45	5.782	15/12/2012 18:30	5.851	16/12/2012 08:15	5.868
15/12/2012 05:00	5.784	15/12/2012 18:45	5.853	16/12/2012 08:30	5.867
15/12/2012 05:15	5.786	15/12/2012 19:00	5.853	16/12/2012 08:45	5.866
15/12/2012 05:30	5.786	15/12/2012 19:15	5.854	16/12/2012 09:00	5.865
15/12/2012 05:45	5.788	15/12/2012 19:30	5.856	16/12/2012 09:15	5.864
15/12/2012 06:00	5.789	15/12/2012 19:45	5.856	16/12/2012 09:30	5.863
15/12/2012 06:15	5.791	15/12/2012 20:00	5.857	16/12/2012 09:45	5.863
15/12/2012 06:30	5.794	15/12/2012 20:15	5.858	16/12/2012 10:00	5.863
15/12/2012 06:45	5.795	15/12/2012 20:30	5.859	16/12/2012 10:15	5.862
15/12/2012 07:00	5.796	15/12/2012 20:45	5.860	16/12/2012 10:30	5.862
15/12/2012 07:15	5.798	15/12/2012 21:00	5.860	16/12/2012 10:45	5.862
15/12/2012 07:30	5.801	15/12/2012 21:15	5.861	16/12/2012 11:00	5.862
15/12/2012 07:45	5.800	15/12/2012 21:30	5.862	16/12/2012 11:15	5.862
15/12/2012 08:00	5.803	15/12/2012 21:45	5.861	16/12/2012 11:30	5.863

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Date / time	WL (mbdl)	Date / time	WL (mbdl)	Date / time	WL (mbdl)
16/12/2012 11:45	5.860				
16/12/2012 12:00	5.860				
16/12/2012 12:15	5.859				
16/12/2012 12:30	5.860				
16/12/2012 12:45	5.859				
16/12/2012 13:00	5.857				
16/12/2012 13:15	5.858				
16/12/2012 13:30	5.858				
16/12/2012 13:45	5.858				
16/12/2012 14:00	5.858				
16/12/2012 14:15	5.857				
16/12/2012 14:30	5.859				
16/12/2012 14:45	5.858				
16/12/2012 15:00	5.858				
16/12/2012 15:15	5.859				
16/12/2012 15:30	5.860				
16/12/2012 15:45	5.859				
16/12/2012 16:00	5.861				
16/12/2012 16:15	5.860				
16/12/2012 16:30	5.861				
16/12/2012 16:45	5.861				
16/12/2012 17:00	5.862				
16/12/2012 17:15	5.863				
16/12/2012 17:30	5.865				
16/12/2012 17:45	5.866				
16/12/2012 18:00	5.868				
16/12/2012 18:15	5.866				
16/12/2012 18:30	5.868				
16/12/2012 18:45	5.867				
16/12/2012 19:00	5.868				
16/12/2012 19:15	5.869				
16/12/2012 19:30	5.869				
16/12/2012 19:45	5.870				
16/12/2012 20:00	5.871				
16/12/2012 20:15	5.871				
16/12/2012 20:30	5.872				
16/12/2012 20:45	5.873				
16/12/2012 21:00	5.872				
16/12/2012 21:15	5.874				
16/12/2012 21:30	5.874				
16/12/2012 21:45	5.874				
16/12/2012 22:00	5.874				
16/12/2012 22:15	5.875				
16/12/2012 22:30	5.876				
16/12/2012 22:45	5.877				
16/12/2012 23:00	5.878				
16/12/2012 23:15	5.878				
16/12/2012 23:30	5.879				
16/12/2012 23:45	5.879				
17/12/2012 00:00	5.880				

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Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
11/12/2012 08:20	5.090	11/12/2012 22:05	5.169	12/12/2012 11:50	5.242
11/12/2012 08:35	5.089	11/12/2012 22:20	5.178	12/12/2012 12:05	5.241
11/12/2012 08:50	5.088	11/12/2012 22:35	5.177	12/12/2012 12:20	5.242
11/12/2012 09:05	5.094	11/12/2012 22:50	5.179	12/12/2012 12:35	5.246
11/12/2012 09:20	5.097	11/12/2012 23:05	5.179	12/12/2012 12:50	5.239
11/12/2012 09:35	5.098	11/12/2012 23:20	5.181	12/12/2012 13:05	5.243
11/12/2012 09:50	5.103	11/12/2012 23:35	5.184	12/12/2012 13:20	5.242
11/12/2012 10:05	5.106	11/12/2012 23:50	5.187	12/12/2012 13:35	5.245
11/12/2012 10:20	5.109	12/12/2012 00:05	5.186	12/12/2012 13:50	5.247
11/12/2012 10:35	5.113	12/12/2012 00:20	5.188	12/12/2012 14:05	5.246
11/12/2012 10:50	5.116	12/12/2012 00:35	5.189	12/12/2012 14:20	5.246
11/12/2012 11:05	5.116	12/12/2012 00:50	5.191	12/12/2012 14:35	5.245
11/12/2012 11:20	5.119	12/12/2012 01:05	5.193	12/12/2012 14:50	5.247
11/12/2012 11:35	5.121	12/12/2012 01:20	5.194	12/12/2012 15:05	5.248
11/12/2012 11:50	5.123	12/12/2012 01:35	5.194	12/12/2012 15:20	5.253
11/12/2012 12:05	5.120	12/12/2012 01:50	5.195	12/12/2012 15:35	5.251
11/12/2012 12:20	5.124	12/12/2012 02:05	5.199	12/12/2012 15:50	5.257
11/12/2012 12:35	5.120	12/12/2012 02:20	5.196	12/12/2012 16:05	5.260
11/12/2012 12:50	5.121	12/12/2012 02:35	5.201	12/12/2012 16:20	5.259
11/12/2012 13:05	5.123	12/12/2012 02:50	5.199	12/12/2012 16:35	5.264
11/12/2012 13:20	5.126	12/12/2012 03:05	5.199	12/12/2012 16:50	5.264
11/12/2012 13:35	5.128	12/12/2012 03:20	5.201	12/12/2012 17:05	5.265
11/12/2012 13:50	5.124	12/12/2012 03:35	5.202	12/12/2012 17:20	5.264
11/12/2012 14:05	5.126	12/12/2012 03:50	5.204	12/12/2012 17:35	5.268
11/12/2012 14:20	5.123	12/12/2012 04:05	5.201	12/12/2012 17:50	5.270
11/12/2012 14:35	5.128	12/12/2012 04:20	5.199	12/12/2012 18:05	5.271
11/12/2012 14:50	5.127	12/12/2012 04:35	5.201	12/12/2012 18:20	5.272
11/12/2012 15:05	5.130	12/12/2012 04:50	5.203	12/12/2012 18:35	5.272
11/12/2012 15:20	5.131	12/12/2012 05:05	5.205	12/12/2012 18:50	5.273
11/12/2012 15:35	5.133	12/12/2012 05:20	5.204	12/12/2012 19:05	5.276
11/12/2012 15:50	5.132	12/12/2012 05:35	5.204	12/12/2012 19:20	5.276
11/12/2012 16:05	5.141	12/12/2012 05:50	5.205	12/12/2012 19:35	5.276
11/12/2012 16:20	5.138	12/12/2012 06:05	5.207	12/12/2012 19:50	5.281
11/12/2012 16:35	5.137	12/12/2012 06:20	5.210	12/12/2012 20:05	5.284
11/12/2012 16:50	5.134	12/12/2012 06:35	5.211	12/12/2012 20:20	5.284
11/12/2012 17:05	5.140	12/12/2012 06:50	5.213	12/12/2012 20:35	5.288
11/12/2012 17:20	5.143	12/12/2012 07:05	5.213	12/12/2012 20:50	5.289
11/12/2012 17:35	5.143	12/12/2012 07:20	5.218	12/12/2012 21:05	5.289
11/12/2012 17:50	5.144	12/12/2012 07:35	5.219	12/12/2012 21:20	5.295
11/12/2012 18:05	5.147	12/12/2012 07:50	5.218	12/12/2012 21:35	5.297
11/12/2012 18:20	5.148	12/12/2012 08:05	5.218	12/12/2012 21:50	5.298
11/12/2012 18:35	5.148	12/12/2012 08:20	5.217	12/12/2012 22:05	5.303
11/12/2012 18:50	5.149	12/12/2012 08:35	5.223	12/12/2012 22:20	5.304
11/12/2012 19:05	5.156	12/12/2012 08:50	5.227	12/12/2012 22:35	5.305
11/12/2012 19:20	5.155	12/12/2012 09:05	5.231	12/12/2012 22:50	5.312
11/12/2012 19:35	5.155	12/12/2012 09:20	5.226	12/12/2012 23:05	5.312
11/12/2012 19:50	5.155	12/12/2012 09:35	5.228	12/12/2012 23:20	5.310
11/12/2012 20:05	5.158	12/12/2012 09:50	5.230	12/12/2012 23:35	5.315
11/12/2012 20:20	5.158	12/12/2012 10:05	5.233	12/12/2012 23:50	5.320
11/12/2012 20:35	5.161	12/12/2012 10:20	5.235	13/12/2012 00:05	5.323
11/12/2012 20:50	5.165	12/12/2012 10:35	5.237	13/12/2012 00:20	5.321
11/12/2012 21:05	5.165	12/12/2012 10:50	5.238	13/12/2012 00:35	5.322
11/12/2012 21:20	5.165	12/12/2012 11:05	5.240	13/12/2012 00:50	5.327
11/12/2012 21:35	5.172	12/12/2012 11:20	5.239	13/12/2012 01:05	5.324
11/12/2012 21:50	5.171	12/12/2012 11:35	5.240	13/12/2012 01:20	5.327

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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13/12/2012 01:50	5.334	13/12/2012 15:35	5.404	14/12/2012 05:20	5.291
13/12/2012 02:05	5.336	13/12/2012 15:50	5.407	14/12/2012 05:35	5.289
13/12/2012 02:20	5.340	13/12/2012 16:05	5.401	14/12/2012 05:50	5.284
13/12/2012 02:35	5.344	13/12/2012 16:20	5.391	14/12/2012 06:05	5.280
13/12/2012 02:50	5.346	13/12/2012 16:35	5.394	14/12/2012 06:20	5.278
13/12/2012 03:05	5.345	13/12/2012 16:50	5.396	14/12/2012 06:35	5.273
13/12/2012 03:20	5.346	13/12/2012 17:05	5.390	14/12/2012 06:50	5.267
13/12/2012 03:35	5.345	13/12/2012 17:20	5.385	14/12/2012 07:05	5.264
13/12/2012 03:50	5.346	13/12/2012 17:35	5.384	14/12/2012 07:20	5.259
13/12/2012 04:05	5.351	13/12/2012 17:50	5.385	14/12/2012 07:35	5.253
13/12/2012 04:20	5.351	13/12/2012 18:05	5.390	14/12/2012 07:50	5.246
13/12/2012 04:35	5.348	13/12/2012 18:20	5.395	14/12/2012 08:05	5.246
13/12/2012 04:50	5.354	13/12/2012 18:35	5.393	14/12/2012 08:20	5.243
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13/12/2012 05:20	5.356	13/12/2012 19:05	5.398	14/12/2012 08:50	5.234
13/12/2012 05:35	5.360	13/12/2012 19:20	5.393	14/12/2012 09:05	5.224
13/12/2012 05:50	5.359	13/12/2012 19:35	5.398	14/12/2012 09:20	5.218
13/12/2012 06:05	5.363	13/12/2012 19:50	5.394	14/12/2012 09:35	5.214
13/12/2012 06:20	5.361	13/12/2012 20:05	5.393	14/12/2012 09:50	5.208
13/12/2012 06:35	5.363	13/12/2012 20:20	5.394	14/12/2012 10:05	5.197
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13/12/2012 07:05	5.369	13/12/2012 20:50	5.390	14/12/2012 10:35	5.166
13/12/2012 07:20	5.371	13/12/2012 21:05	5.388	14/12/2012 10:50	5.148
13/12/2012 07:35	5.371	13/12/2012 21:20	5.384	14/12/2012 11:05	5.134
13/12/2012 07:50	5.374	13/12/2012 21:35	5.384	14/12/2012 11:20	5.118
13/12/2012 08:05	5.377	13/12/2012 21:50	5.382	14/12/2012 11:35	5.093
13/12/2012 08:20	5.379	13/12/2012 22:05	5.386	14/12/2012 11:50	5.064
13/12/2012 08:35	5.382	13/12/2012 22:20	5.382	14/12/2012 12:05	5.035
13/12/2012 08:50	5.384	13/12/2012 22:35	5.381	14/12/2012 12:20	5.021
13/12/2012 09:05	5.384	13/12/2012 22:50	5.375	14/12/2012 12:35	4.920
13/12/2012 09:20	5.387	13/12/2012 23:05	5.370	14/12/2012 12:50	4.895
13/12/2012 09:35	5.388	13/12/2012 23:20	5.371	14/12/2012 13:05	4.883
13/12/2012 09:50	5.387	13/12/2012 23:35	5.366	14/12/2012 13:20	4.862
13/12/2012 10:05	5.394	13/12/2012 23:50	5.372	14/12/2012 13:35	4.838
13/12/2012 10:20	5.395	14/12/2012 00:05	5.367	14/12/2012 13:50	4.812
13/12/2012 10:35	5.391	14/12/2012 00:20	5.370	14/12/2012 14:05	4.942
13/12/2012 10:50	5.392	14/12/2012 00:35	5.367	14/12/2012 14:20	4.879
13/12/2012 11:05	5.396	14/12/2012 00:50	5.363	14/12/2012 14:35	4.861
13/12/2012 11:20	5.394	14/12/2012 01:05	5.361	14/12/2012 14:50	4.854
13/12/2012 11:35	5.390	14/12/2012 01:20	5.359	14/12/2012 15:05	4.850
13/12/2012 11:50	5.394	14/12/2012 01:35	5.361	14/12/2012 15:20	4.844
13/12/2012 12:05	5.392	14/12/2012 01:50	5.354	14/12/2012 15:35	4.842
13/12/2012 12:20	5.395	14/12/2012 02:05	5.348	14/12/2012 15:50	4.838
13/12/2012 12:35	5.396	14/12/2012 02:20	5.350	14/12/2012 16:05	4.832
13/12/2012 12:50	5.401	14/12/2012 02:35	5.339	14/12/2012 16:20	4.828
13/12/2012 13:05	5.403	14/12/2012 02:50	5.336	14/12/2012 16:35	4.826
13/12/2012 13:20	5.403	14/12/2012 03:05	5.327	14/12/2012 16:50	4.823
13/12/2012 13:35	5.407	14/12/2012 03:20	5.328	14/12/2012 17:05	4.821
13/12/2012 13:50	5.406	14/12/2012 03:35	5.322	14/12/2012 17:20	4.822
13/12/2012 14:05	5.406	14/12/2012 03:50	5.316	14/12/2012 17:35	4.817
13/12/2012 14:20	5.404	14/12/2012 04:05	5.313	14/12/2012 17:50	4.823
13/12/2012 14:35	5.403	14/12/2012 04:20	5.306	14/12/2012 18:05	4.824
13/12/2012 14:50	5.404	14/12/2012 04:35	5.303	14/12/2012 18:20	4.827
13/12/2012 15:05	5.403	14/12/2012 04:50	5.301	14/12/2012 18:35	4.828

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14/12/2012 19:20	4.839	15/12/2012 09:05	4.916	15/12/2012 22:50	4.608
14/12/2012 19:35	4.842	15/12/2012 09:20	4.912	15/12/2012 23:05	4.611
14/12/2012 19:50	4.845	15/12/2012 09:35	4.907	15/12/2012 23:20	4.608
14/12/2012 20:05	4.841	15/12/2012 09:50	4.905	15/12/2012 23:35	4.609
14/12/2012 20:20	4.844	15/12/2012 10:05	4.898	15/12/2012 23:50	4.609
14/12/2012 20:35	4.848	15/12/2012 10:20	4.885	16/12/2012 00:05	4.614
14/12/2012 20:50	4.845	15/12/2012 10:35	4.875	16/12/2012 00:20	4.612
14/12/2012 21:05	4.851	15/12/2012 10:50	4.874	16/12/2012 00:35	4.608
14/12/2012 21:20	4.850	15/12/2012 11:05	4.861	16/12/2012 00:50	4.607
14/12/2012 21:35	4.852	15/12/2012 11:20	4.861	16/12/2012 01:05	4.606
14/12/2012 21:50	4.855	15/12/2012 11:35	4.857	16/12/2012 01:20	4.611
14/12/2012 22:05	4.861	15/12/2012 11:50	4.846	16/12/2012 01:35	4.607
14/12/2012 22:20	4.860	15/12/2012 12:05	4.838	16/12/2012 01:50	4.605
14/12/2012 22:35	4.863	15/12/2012 12:20	4.830	16/12/2012 02:05	4.613
14/12/2012 22:50	4.862	15/12/2012 12:35	4.827	16/12/2012 02:20	4.612
14/12/2012 23:05	4.865	15/12/2012 12:50	4.819	16/12/2012 02:35	4.615
14/12/2012 23:20	4.867	15/12/2012 13:05	4.817	16/12/2012 02:50	4.621
14/12/2012 23:35	4.865	15/12/2012 13:20	4.805	16/12/2012 03:05	4.616
14/12/2012 23:50	4.868	15/12/2012 13:35	4.795	16/12/2012 03:20	4.618
15/12/2012 00:05	4.872	15/12/2012 13:50	4.793	16/12/2012 03:35	4.615
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15/12/2012 00:35	4.871	15/12/2012 14:20	4.780	16/12/2012 04:05	4.612
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15/12/2012 01:05	4.878	15/12/2012 14:50	4.767	16/12/2012 04:35	4.612
15/12/2012 01:20	4.876	15/12/2012 15:05	4.753	16/12/2012 04:50	4.611
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15/12/2012 03:05	4.896	15/12/2012 16:50	4.685	16/12/2012 06:35	4.611
15/12/2012 03:20	4.896	15/12/2012 17:05	4.676	16/12/2012 06:50	4.607
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15/12/2012 05:05	4.912	15/12/2012 18:50	4.647	16/12/2012 08:35	4.593
15/12/2012 05:20	4.914	15/12/2012 19:05	4.640	16/12/2012 08:50	4.591
15/12/2012 05:35	4.914	15/12/2012 19:20	4.637	16/12/2012 09:05	4.585
15/12/2012 05:50	4.922	15/12/2012 19:35	4.632	16/12/2012 09:20	4.587
15/12/2012 06:05	4.925	15/12/2012 19:50	4.630	16/12/2012 09:35	4.584
15/12/2012 06:20	4.922	15/12/2012 20:05	4.626	16/12/2012 09:50	4.584
15/12/2012 06:35	4.927	15/12/2012 20:20	4.628	16/12/2012 10:05	4.581
15/12/2012 06:50	4.925	15/12/2012 20:35	4.622	16/12/2012 10:20	4.584
15/12/2012 07:05	4.925	15/12/2012 20:50	4.624	16/12/2012 10:35	4.579
15/12/2012 07:20	4.927	15/12/2012 21:05	4.619	16/12/2012 10:50	4.581
15/12/2012 07:35	4.926	15/12/2012 21:20	4.614	16/12/2012 11:05	4.581
15/12/2012 07:50	4.926	15/12/2012 21:35	4.612	16/12/2012 11:20	4.579
15/12/2012 08:05	4.926	15/12/2012 21:50	4.610	16/12/2012 11:35	4.574
15/12/2012 08:20	4.927	15/12/2012 22:05	4.611	16/12/2012 11:50	4.568

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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16/12/2012 12:50	4.541				
16/12/2012 13:05	4.527				
16/12/2012 13:20	4.516				
16/12/2012 13:35	4.503				
16/12/2012 13:50	4.473				
16/12/2012 14:05	4.444				
16/12/2012 14:20	4.412				
16/12/2012 14:35	4.364				
16/12/2012 14:50	4.333				
16/12/2012 15:05	4.308				
16/12/2012 15:20	4.284				
16/12/2012 15:35	4.268				
16/12/2012 15:50	4.250				
16/12/2012 16:05	4.238				
16/12/2012 16:20	4.221				
16/12/2012 16:35	4.212				
16/12/2012 16:50	4.198				
16/12/2012 17:05	4.191				
16/12/2012 17:20	4.185				
16/12/2012 17:35	4.189				
16/12/2012 17:50	4.183				
16/12/2012 18:05	4.173				
16/12/2012 18:20	4.167				
16/12/2012 18:35	4.154				
16/12/2012 18:50	4.137				
16/12/2012 19:05	4.124				
16/12/2012 19:20	4.104				
16/12/2012 19:35	4.087				
16/12/2012 19:50	4.073				
16/12/2012 20:05	4.057				
16/12/2012 20:20	4.048				
16/12/2012 20:35	4.035				
16/12/2012 20:50	4.029				
16/12/2012 21:05	4.022				
16/12/2012 21:20	4.014				
16/12/2012 21:35	4.011				
16/12/2012 21:50	4.008				
16/12/2012 22:05	4.006				
16/12/2012 22:20	4.010				
16/12/2012 22:35	4.007				
16/12/2012 22:50	4.012				
16/12/2012 23:05	4.016				
16/12/2012 23:20	4.025				
16/12/2012 23:35	4.029				
16/12/2012 23:50	4.039				
17/12/2012 00:05	4.044				

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Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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11/12/2012 08:15	7.585	11/12/2012 22:00	7.737	12/12/2012 11:45	7.853
11/12/2012 08:30	7.588	11/12/2012 22:15	7.739	12/12/2012 12:00	7.857
11/12/2012 08:45	7.591	11/12/2012 22:30	7.741	12/12/2012 12:15	7.862
11/12/2012 09:00	7.595	11/12/2012 22:45	7.742	12/12/2012 12:30	7.867
11/12/2012 09:15	7.599	11/12/2012 23:00	7.744	12/12/2012 12:45	7.872
11/12/2012 09:30	7.603	11/12/2012 23:15	7.745	12/12/2012 13:00	7.875
11/12/2012 09:45	7.608	11/12/2012 23:30	7.748	12/12/2012 13:15	7.878
11/12/2012 10:00	7.612	11/12/2012 23:45	7.751	12/12/2012 13:30	7.883
11/12/2012 10:15	7.617	12/12/2012 00:00	7.753	12/12/2012 13:45	7.887
11/12/2012 10:30	7.619	12/12/2012 00:15	7.753	12/12/2012 14:00	7.890
11/12/2012 10:45	7.623	12/12/2012 00:30	7.755	12/12/2012 14:15	7.892
11/12/2012 11:00	7.625	12/12/2012 00:45	7.758	12/12/2012 14:30	7.892
11/12/2012 11:15	7.629	12/12/2012 01:00	7.759	12/12/2012 14:45	7.894
11/12/2012 11:30	7.632	12/12/2012 01:15	7.762	12/12/2012 15:00	7.898
11/12/2012 11:45	7.637	12/12/2012 01:30	7.765	12/12/2012 15:15	7.901
11/12/2012 12:00	7.640	12/12/2012 01:45	7.768	12/12/2012 15:30	7.904
11/12/2012 12:15	7.644	12/12/2012 02:00	7.770	12/12/2012 15:45	7.906
11/12/2012 12:30	7.646	12/12/2012 02:15	7.771	12/12/2012 16:00	7.907
11/12/2012 12:45	7.648	12/12/2012 02:30	7.772	12/12/2012 16:15	7.910
11/12/2012 13:00	7.650	12/12/2012 02:45	7.773	12/12/2012 16:30	7.913
11/12/2012 13:15	7.651	12/12/2012 03:00	7.774	12/12/2012 16:45	7.918
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11/12/2012 13:45	7.655	12/12/2012 03:30	7.777	12/12/2012 17:15	7.921
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11/12/2012 15:30	7.665	12/12/2012 05:15	7.781	12/12/2012 19:00	7.935
11/12/2012 15:45	7.669	12/12/2012 05:30	7.782	12/12/2012 19:15	7.939
11/12/2012 16:00	7.672	12/12/2012 05:45	7.783	12/12/2012 19:30	7.942
11/12/2012 16:15	7.676	12/12/2012 06:00	7.784	12/12/2012 19:45	7.944
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11/12/2012 17:15	7.692	12/12/2012 07:00	7.791	12/12/2012 20:45	7.954
11/12/2012 17:30	7.695	12/12/2012 07:15	7.793	12/12/2012 21:00	7.958
11/12/2012 17:45	7.697	12/12/2012 07:30	7.795	12/12/2012 21:15	7.961
11/12/2012 18:00	7.699	12/12/2012 07:45	7.797	12/12/2012 21:30	7.963
11/12/2012 18:15	7.701	12/12/2012 08:00	7.801	12/12/2012 21:45	7.967
11/12/2012 18:30	7.703	12/12/2012 08:15	7.802	12/12/2012 22:00	7.970
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11/12/2012 20:30	7.721	12/12/2012 10:15	7.827	13/12/2012 00:00	7.991
11/12/2012 20:45	7.727	12/12/2012 10:30	7.832	13/12/2012 00:15	7.995
11/12/2012 21:00	7.728	12/12/2012 10:45	7.838	13/12/2012 00:30	7.997
11/12/2012 21:15	7.731	12/12/2012 11:00	7.841	13/12/2012 00:45	7.999
11/12/2012 21:30	7.732	12/12/2012 11:15	7.845	13/12/2012 01:00	8.002

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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13/12/2012 01:45	8.010	13/12/2012 15:30	8.173	14/12/2012 05:15	8.159
13/12/2012 02:00	8.012	13/12/2012 15:45	8.176	14/12/2012 05:30	8.156
13/12/2012 02:15	8.015	13/12/2012 16:00	8.179	14/12/2012 05:45	8.152
13/12/2012 02:30	8.016	13/12/2012 16:15	8.181	14/12/2012 06:00	8.148
13/12/2012 02:45	8.018	13/12/2012 16:30	8.183	14/12/2012 06:15	8.144
13/12/2012 03:00	8.021	13/12/2012 16:45	8.186	14/12/2012 06:30	8.138
13/12/2012 03:15	8.023	13/12/2012 17:00	8.187	14/12/2012 06:45	8.131
13/12/2012 03:30	8.024	13/12/2012 17:15	8.190	14/12/2012 07:00	8.125
13/12/2012 03:45	8.026	13/12/2012 17:30	8.191	14/12/2012 07:15	8.121
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13/12/2012 04:15	8.028	13/12/2012 18:00	8.194	14/12/2012 07:45	8.114
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13/12/2012 04:45	8.032	13/12/2012 18:30	8.194	14/12/2012 08:15	8.108
13/12/2012 05:00	8.032	13/12/2012 18:45	8.194	14/12/2012 08:30	8.106
13/12/2012 05:15	8.034	13/12/2012 19:00	8.193	14/12/2012 08:45	8.104
13/12/2012 05:30	8.035	13/12/2012 19:15	8.193	14/12/2012 09:00	8.103
13/12/2012 05:45	8.037	13/12/2012 19:30	8.195	14/12/2012 09:15	8.100
13/12/2012 06:00	8.039	13/12/2012 19:45	8.195	14/12/2012 09:30	8.099
13/12/2012 06:15	8.040	13/12/2012 20:00	8.196	14/12/2012 09:45	8.098
13/12/2012 06:30	8.041	13/12/2012 20:15	8.197	14/12/2012 10:00	8.097
13/12/2012 06:45	8.044	13/12/2012 20:30	8.198	14/12/2012 10:15	8.095
13/12/2012 07:00	8.046	13/12/2012 20:45	8.200	14/12/2012 10:30	8.094
13/12/2012 07:15	8.047	13/12/2012 21:00	8.200	14/12/2012 10:45	8.090
13/12/2012 07:30	8.049	13/12/2012 21:15	8.202	14/12/2012 11:00	8.094
13/12/2012 07:45	8.051	13/12/2012 21:30	8.203	14/12/2012 11:15	8.093
13/12/2012 08:00	8.054	13/12/2012 21:45	8.206	14/12/2012 11:30	8.095
13/12/2012 08:15	8.053	13/12/2012 22:00	8.208	14/12/2012 11:45	8.089
13/12/2012 08:30	8.056	13/12/2012 22:15	8.209	14/12/2012 12:00	8.092
13/12/2012 08:45	8.060	13/12/2012 22:30	8.211	14/12/2012 12:15	8.112
13/12/2012 09:00	8.063	13/12/2012 22:45	8.213	14/12/2012 12:30	8.044
13/12/2012 09:15	8.065	13/12/2012 23:00	8.214	14/12/2012 12:45	8.057
13/12/2012 09:30	8.070	13/12/2012 23:15	8.217	14/12/2012 13:00	8.059
13/12/2012 09:45	8.077	13/12/2012 23:30	8.219	14/12/2012 13:15	8.068
13/12/2012 10:00	8.083	13/12/2012 23:45	8.221	14/12/2012 13:30	8.070
13/12/2012 10:15	8.090	14/12/2012 00:00	8.224	14/12/2012 13:45	8.054
13/12/2012 10:30	8.095	14/12/2012 00:15	8.228	14/12/2012 14:00	8.138
13/12/2012 10:45	8.099	14/12/2012 00:30	8.229	14/12/2012 14:15	8.103
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13/12/2012 11:30	8.111	14/12/2012 01:15	8.233	14/12/2012 15:00	8.111
13/12/2012 11:45	8.116	14/12/2012 01:30	8.233	14/12/2012 15:15	8.112
13/12/2012 12:00	8.120	14/12/2012 01:45	8.230	14/12/2012 15:30	8.112
13/12/2012 12:15	8.124	14/12/2012 02:00	8.225	14/12/2012 15:45	8.113
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13/12/2012 13:00	8.138	14/12/2012 02:45	8.199	14/12/2012 16:30	8.118
13/12/2012 13:15	8.142	14/12/2012 03:00	8.191	14/12/2012 16:45	8.120
13/12/2012 13:30	8.145	14/12/2012 03:15	8.186	14/12/2012 17:00	8.123
13/12/2012 13:45	8.150	14/12/2012 03:30	8.182	14/12/2012 17:15	8.126
13/12/2012 14:00	8.153	14/12/2012 03:45	8.179	14/12/2012 17:30	8.126
13/12/2012 14:15	8.156	14/12/2012 04:00	8.177	14/12/2012 17:45	8.125
13/12/2012 14:30	8.159	14/12/2012 04:15	8.173	14/12/2012 18:00	8.123
13/12/2012 14:45	8.165	14/12/2012 04:30	8.169	14/12/2012 18:15	8.124

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14/12/2012 19:00	8.123	15/12/2012 08:45	8.143	15/12/2012 22:30	8.129
14/12/2012 19:15	8.123	15/12/2012 09:00	8.142	15/12/2012 22:45	8.130
14/12/2012 19:30	8.123	15/12/2012 09:15	8.142	15/12/2012 23:00	8.129
14/12/2012 19:45	8.124	15/12/2012 09:30	8.141	15/12/2012 23:15	8.128
14/12/2012 20:00	8.125	15/12/2012 09:45	8.139	15/12/2012 23:30	8.127
14/12/2012 20:15	8.125	15/12/2012 10:00	8.139	15/12/2012 23:45	8.129
14/12/2012 20:30	8.127	15/12/2012 10:15	8.140	16/12/2012 00:00	8.129
14/12/2012 20:45	8.128	15/12/2012 10:30	8.142	16/12/2012 00:15	8.130
14/12/2012 21:00	8.130	15/12/2012 10:45	8.145	16/12/2012 00:30	8.130
14/12/2012 21:15	8.131	15/12/2012 11:00	8.148	16/12/2012 00:45	8.130
14/12/2012 21:30	8.132	15/12/2012 11:15	8.151	16/12/2012 01:00	8.130
14/12/2012 21:45	8.132	15/12/2012 11:30	8.154	16/12/2012 01:15	8.131
14/12/2012 22:00	8.133	15/12/2012 11:45	8.153	16/12/2012 01:30	8.131
14/12/2012 22:15	8.134	15/12/2012 12:00	8.155	16/12/2012 01:45	8.132
14/12/2012 22:30	8.135	15/12/2012 12:15	8.156	16/12/2012 02:00	8.132
14/12/2012 22:45	8.135	15/12/2012 12:30	8.159	16/12/2012 02:15	8.133
14/12/2012 23:00	8.137	15/12/2012 12:45	8.161	16/12/2012 02:30	8.134
14/12/2012 23:15	8.139	15/12/2012 13:00	8.163	16/12/2012 02:45	8.133
14/12/2012 23:30	8.140	15/12/2012 13:15	8.164	16/12/2012 03:00	8.133
14/12/2012 23:45	8.142	15/12/2012 13:30	8.164	16/12/2012 03:15	8.133
15/12/2012 00:00	8.143	15/12/2012 13:45	8.162	16/12/2012 03:30	8.133
15/12/2012 00:15	8.146	15/12/2012 14:00	8.160	16/12/2012 03:45	8.133
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15/12/2012 00:45	8.149	15/12/2012 14:30	8.161	16/12/2012 04:15	8.133
15/12/2012 01:00	8.151	15/12/2012 14:45	8.160	16/12/2012 04:30	8.133
15/12/2012 01:15	8.153	15/12/2012 15:00	8.162	16/12/2012 04:45	8.133
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15/12/2012 01:45	8.161	15/12/2012 15:30	8.164	16/12/2012 05:15	8.133
15/12/2012 02:00	8.162	15/12/2012 15:45	8.165	16/12/2012 05:30	8.133
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15/12/2012 02:30	8.164	15/12/2012 16:15	8.166	16/12/2012 06:00	8.128
15/12/2012 02:45	8.164	15/12/2012 16:30	8.166	16/12/2012 06:15	8.128
15/12/2012 03:00	8.165	15/12/2012 16:45	8.165	16/12/2012 06:30	8.126
15/12/2012 03:15	8.167	15/12/2012 17:00	8.165	16/12/2012 06:45	8.125
15/12/2012 03:30	8.168	15/12/2012 17:15	8.165	16/12/2012 07:00	8.125
15/12/2012 03:45	8.169	15/12/2012 17:30	8.164	16/12/2012 07:15	8.124
15/12/2012 04:00	8.169	15/12/2012 17:45	8.162	16/12/2012 07:30	8.123
15/12/2012 04:15	8.168	15/12/2012 18:00	8.160	16/12/2012 07:45	8.121
15/12/2012 04:30	8.168	15/12/2012 18:15	8.156	16/12/2012 08:00	8.118
15/12/2012 04:45	8.169	15/12/2012 18:30	8.155	16/12/2012 08:15	8.117
15/12/2012 05:00	8.168	15/12/2012 18:45	8.154	16/12/2012 08:30	8.116
15/12/2012 05:15	8.169	15/12/2012 19:00	8.152	16/12/2012 08:45	8.114
15/12/2012 05:30	8.167	15/12/2012 19:15	8.150	16/12/2012 09:00	8.112
15/12/2012 05:45	8.167	15/12/2012 19:30	8.147	16/12/2012 09:15	8.111
15/12/2012 06:00	8.164	15/12/2012 19:45	8.142	16/12/2012 09:30	8.111
15/12/2012 06:15	8.160	15/12/2012 20:00	8.140	16/12/2012 09:45	8.113
15/12/2012 06:30	8.158	15/12/2012 20:15	8.138	16/12/2012 10:00	8.112
15/12/2012 06:45	8.156	15/12/2012 20:30	8.136	16/12/2012 10:15	8.112
15/12/2012 07:00	8.155	15/12/2012 20:45	8.135	16/12/2012 10:30	8.111
15/12/2012 07:15	8.153	15/12/2012 21:00	8.135	16/12/2012 10:45	8.110
15/12/2012 07:30	8.152	15/12/2012 21:15	8.134	16/12/2012 11:00	8.111
15/12/2012 07:45	8.150	15/12/2012 21:30	8.134	16/12/2012 11:15	8.110
15/12/2012 08:00	8.150	15/12/2012 21:45	8.132	16/12/2012 11:30	8.106

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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16/12/2012 12:45	8.093				
16/12/2012 13:00	8.089				
16/12/2012 13:15	8.086				
16/12/2012 13:30	8.085				
16/12/2012 13:45	8.083				
16/12/2012 14:00	8.081				
16/12/2012 14:15	8.078				
16/12/2012 14:30	8.076				
16/12/2012 14:45	8.075				
16/12/2012 15:00	8.073				
16/12/2012 15:15	8.069				
16/12/2012 15:30	8.068				
16/12/2012 15:45	8.064				
16/12/2012 16:00	8.063				
16/12/2012 16:15	8.062				
16/12/2012 16:30	8.061				
16/12/2012 16:45	8.061				
16/12/2012 17:00	8.059				
16/12/2012 17:15	8.058				
16/12/2012 17:30	8.058				
16/12/2012 17:45	8.057				
16/12/2012 18:00	8.050				
16/12/2012 18:15	8.040				
16/12/2012 18:30	8.031				
16/12/2012 18:45	8.027				
16/12/2012 19:00	8.021				
16/12/2012 19:15	8.016				
16/12/2012 19:30	8.010				
16/12/2012 19:45	8.006				
16/12/2012 20:00	8.002				
16/12/2012 20:15	7.997				
16/12/2012 20:30	7.993				
16/12/2012 20:45	7.992				
16/12/2012 21:00	7.987				
16/12/2012 21:15	7.983				
16/12/2012 21:30	7.978				
16/12/2012 21:45	7.975				
16/12/2012 22:00	7.970				
16/12/2012 22:15	7.968				
16/12/2012 22:30	7.964				
16/12/2012 22:45	7.962				
16/12/2012 23:00	7.958				
16/12/2012 23:15	7.956				
16/12/2012 23:30	7.953				
16/12/2012 23:45	7.951				
17/12/2012 00:00	7.949				

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Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
11/12/2012 08:00	8.800	11/12/2012 21:45	8.825	12/12/2012 11:30	8.876
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11/12/2012 08:30	8.794	11/12/2012 22:15	8.828	12/12/2012 12:00	8.881
11/12/2012 08:45	8.796	11/12/2012 22:30	8.829	12/12/2012 12:15	8.882
11/12/2012 09:00	8.799	11/12/2012 22:45	8.831	12/12/2012 12:30	8.882
11/12/2012 09:15	8.801	11/12/2012 23:00	8.831	12/12/2012 12:45	8.883
11/12/2012 09:30	8.799	11/12/2012 23:15	8.829	12/12/2012 13:00	8.885
11/12/2012 09:45	8.799	11/12/2012 23:30	8.832	12/12/2012 13:15	8.884
11/12/2012 10:00	8.801	11/12/2012 23:45	8.832	12/12/2012 13:30	8.886
11/12/2012 10:15	8.805	12/12/2012 00:00	8.836	12/12/2012 13:45	8.884
11/12/2012 10:30	8.806	12/12/2012 00:15	8.835	12/12/2012 14:00	8.887
11/12/2012 10:45	8.805	12/12/2012 00:30	8.840	12/12/2012 14:15	8.888
11/12/2012 11:00	8.809	12/12/2012 00:45	8.838	12/12/2012 14:30	8.886
11/12/2012 11:15	8.809	12/12/2012 01:00	8.836	12/12/2012 14:45	8.891
11/12/2012 11:30	8.811	12/12/2012 01:15	8.835	12/12/2012 15:00	8.890
11/12/2012 11:45	8.811	12/12/2012 01:30	8.840	12/12/2012 15:15	8.891
11/12/2012 12:00	8.812	12/12/2012 01:45	8.839	12/12/2012 15:30	8.894
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11/12/2012 12:45	8.822	12/12/2012 02:30	8.838	12/12/2012 16:15	8.895
11/12/2012 13:00	8.822	12/12/2012 02:45	8.842	12/12/2012 16:30	8.895
11/12/2012 13:15	8.826	12/12/2012 03:00	8.841	12/12/2012 16:45	8.897
11/12/2012 13:30	8.826	12/12/2012 03:15	8.841	12/12/2012 17:00	8.894
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11/12/2012 14:00	8.833	12/12/2012 03:45	8.840	12/12/2012 17:30	8.899
11/12/2012 14:15	8.834	12/12/2012 04:00	8.841	12/12/2012 17:45	8.899
11/12/2012 14:30	8.834	12/12/2012 04:15	8.842	12/12/2012 18:00	8.902
11/12/2012 14:45	8.834	12/12/2012 04:30	8.843	12/12/2012 18:15	8.904
11/12/2012 15:00	8.837	12/12/2012 04:45	8.842	12/12/2012 18:30	8.902
11/12/2012 15:15	8.835	12/12/2012 05:00	8.844	12/12/2012 18:45	8.903
11/12/2012 15:30	8.831	12/12/2012 05:15	8.843	12/12/2012 19:00	8.908
11/12/2012 15:45	8.829	12/12/2012 05:30	8.845	12/12/2012 19:15	8.906
11/12/2012 16:00	8.808	12/12/2012 05:45	8.847	12/12/2012 19:30	8.908
11/12/2012 16:15	8.796	12/12/2012 06:00	8.848	12/12/2012 19:45	8.910
11/12/2012 16:30	8.798	12/12/2012 06:15	8.850	12/12/2012 20:00	8.915
11/12/2012 16:45	8.798	12/12/2012 06:30	8.851	12/12/2012 20:15	8.914
11/12/2012 17:00	8.798	12/12/2012 06:45	8.851	12/12/2012 20:30	8.916
11/12/2012 17:15	8.805	12/12/2012 07:00	8.851	12/12/2012 20:45	8.916
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11/12/2012 17:45	8.807	12/12/2012 07:30	8.854	12/12/2012 21:15	8.919
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11/12/2012 18:30	8.812	12/12/2012 08:15	8.858	12/12/2012 22:00	8.924
11/12/2012 18:45	8.811	12/12/2012 08:30	8.863	12/12/2012 22:15	8.925
11/12/2012 19:00	8.811	12/12/2012 08:45	8.860	12/12/2012 22:30	8.929
11/12/2012 19:15	8.813	12/12/2012 09:00	8.864	12/12/2012 22:45	8.932
11/12/2012 19:30	8.817	12/12/2012 09:15	8.868	12/12/2012 23:00	8.936
11/12/2012 19:45	8.817	12/12/2012 09:30	8.869	12/12/2012 23:15	8.937
11/12/2012 20:00	8.821	12/12/2012 09:45	8.870	12/12/2012 23:30	8.937
11/12/2012 20:15	8.816	12/12/2012 10:00	8.868	12/12/2012 23:45	8.941
11/12/2012 20:30	8.820	12/12/2012 10:15	8.870	13/12/2012 00:00	8.944
11/12/2012 20:45	8.821	12/12/2012 10:30	8.871	13/12/2012 00:15	8.942
11/12/2012 21:00	8.822	12/12/2012 10:45	8.873	13/12/2012 00:30	8.943
11/12/2012 21:15	8.822	12/12/2012 11:00	8.875	13/12/2012 00:45	8.943
11/12/2012 21:30	8.827	12/12/2012 11:15	8.878	13/12/2012 01:00	8.943

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
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13/12/2012 01:45	8.951	13/12/2012 15:30	9.006	14/12/2012 05:15	9.055
13/12/2012 02:00	8.949	13/12/2012 15:45	9.009	14/12/2012 05:30	9.057
13/12/2012 02:15	8.950	13/12/2012 16:00	9.010	14/12/2012 05:45	9.058
13/12/2012 02:30	8.950	13/12/2012 16:15	9.007	14/12/2012 06:00	9.055
13/12/2012 02:45	8.955	13/12/2012 16:30	9.007	14/12/2012 06:15	9.061
13/12/2012 03:00	8.957	13/12/2012 16:45	9.006	14/12/2012 06:30	9.058
13/12/2012 03:15	8.955	13/12/2012 17:00	9.007	14/12/2012 06:45	9.062
13/12/2012 03:30	8.958	13/12/2012 17:15	9.006	14/12/2012 07:00	9.063
13/12/2012 03:45	8.958	13/12/2012 17:30	9.007	14/12/2012 07:15	9.066
13/12/2012 04:00	8.956	13/12/2012 17:45	9.004	14/12/2012 07:30	9.067
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13/12/2012 04:30	8.956	13/12/2012 18:15	9.017	14/12/2012 08:00	9.072
13/12/2012 04:45	8.960	13/12/2012 18:30	9.019	14/12/2012 08:15	9.076
13/12/2012 05:00	8.960	13/12/2012 18:45	9.022	14/12/2012 08:30	9.079
13/12/2012 05:15	8.959	13/12/2012 19:00	9.025	14/12/2012 08:45	9.081
13/12/2012 05:30	8.963	13/12/2012 19:15	9.024	14/12/2012 09:00	9.083
13/12/2012 05:45	8.968	13/12/2012 19:30	9.030	14/12/2012 09:15	9.087
13/12/2012 06:00	8.969	13/12/2012 19:45	9.031	14/12/2012 09:30	9.086
13/12/2012 06:15	8.969	13/12/2012 20:00	9.030	14/12/2012 09:45	9.092
13/12/2012 06:30	8.969	13/12/2012 20:15	9.033	14/12/2012 10:00	9.094
13/12/2012 06:45	8.972	13/12/2012 20:30	9.034	14/12/2012 10:15	9.094
13/12/2012 07:00	8.977	13/12/2012 20:45	9.030	14/12/2012 10:30	9.094
13/12/2012 07:15	8.979	13/12/2012 21:00	9.029	14/12/2012 10:45	9.093
13/12/2012 07:30	8.977	13/12/2012 21:15	9.029	14/12/2012 11:00	9.093
13/12/2012 07:45	8.980	13/12/2012 21:30	9.029	14/12/2012 11:15	9.099
13/12/2012 08:00	8.978	13/12/2012 21:45	9.035	14/12/2012 11:30	9.099
13/12/2012 08:15	8.980	13/12/2012 22:00	9.036	14/12/2012 11:45	9.101
13/12/2012 08:30	8.983	13/12/2012 22:15	9.037	14/12/2012 12:00	9.091
13/12/2012 08:45	8.987	13/12/2012 22:30	9.036	14/12/2012 12:15	9.097
13/12/2012 09:00	8.988	13/12/2012 22:45	9.035	14/12/2012 12:30	9.090
13/12/2012 09:15	8.990	13/12/2012 23:00	9.038	14/12/2012 12:45	9.075
13/12/2012 09:30	8.994	13/12/2012 23:15	9.038	14/12/2012 13:00	9.075
13/12/2012 09:45	8.993	13/12/2012 23:30	9.039	14/12/2012 13:15	9.073
13/12/2012 10:00	8.992	13/12/2012 23:45	9.042	14/12/2012 13:30	9.076
13/12/2012 10:15	8.995	14/12/2012 00:00	9.041	14/12/2012 13:45	9.070
13/12/2012 10:30	8.997	14/12/2012 00:15	9.044	14/12/2012 14:00	9.127
13/12/2012 10:45	8.998	14/12/2012 00:30	9.044	14/12/2012 14:15	9.150
13/12/2012 11:00	8.999	14/12/2012 00:45	9.046	14/12/2012 14:30	9.113
13/12/2012 11:15	9.005	14/12/2012 01:00	9.046	14/12/2012 14:45	9.112
13/12/2012 11:30	9.000	14/12/2012 01:15	9.044	14/12/2012 15:00	9.118
13/12/2012 11:45	9.002	14/12/2012 01:30	9.048	14/12/2012 15:15	9.109
13/12/2012 12:00	9.007	14/12/2012 01:45	9.044	14/12/2012 15:30	9.115
13/12/2012 12:15	8.994	14/12/2012 02:00	9.044	14/12/2012 15:45	9.119
13/12/2012 12:30	8.994	14/12/2012 02:15	9.043	14/12/2012 16:00	9.116
13/12/2012 12:45	8.999	14/12/2012 02:30	9.046	14/12/2012 16:15	9.118
13/12/2012 13:00	8.997	14/12/2012 02:45	9.047	14/12/2012 16:30	9.120
13/12/2012 13:15	8.999	14/12/2012 03:00	9.046	14/12/2012 16:45	9.122
13/12/2012 13:30	9.000	14/12/2012 03:15	9.050	14/12/2012 17:00	9.122
13/12/2012 13:45	9.004	14/12/2012 03:30	9.051	14/12/2012 17:15	9.128
13/12/2012 14:00	9.003	14/12/2012 03:45	9.052	14/12/2012 17:30	9.131
13/12/2012 14:15	9.003	14/12/2012 04:00	9.053	14/12/2012 17:45	9.134
13/12/2012 14:30	9.002	14/12/2012 04:15	9.055	14/12/2012 18:00	9.135
13/12/2012 14:45	9.004	14/12/2012 04:30	9.050	14/12/2012 18:15	9.135

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
14/12/2012 18:30	9.141	15/12/2012 08:15	9.177	15/12/2012 22:00	9.294
14/12/2012 18:45	9.142	15/12/2012 08:30	9.183	15/12/2012 22:15	9.293
14/12/2012 19:00	9.139	15/12/2012 08:45	9.178	15/12/2012 22:30	9.291
14/12/2012 19:15	9.143	15/12/2012 09:00	9.180	15/12/2012 22:45	9.291
14/12/2012 19:30	9.140	15/12/2012 09:15	9.187	15/12/2012 23:00	9.301
14/12/2012 19:45	9.141	15/12/2012 09:30	9.189	15/12/2012 23:15	9.301
14/12/2012 20:00	9.143	15/12/2012 09:45	9.195	15/12/2012 23:30	9.297
14/12/2012 20:15	9.136	15/12/2012 10:00	9.201	15/12/2012 23:45	9.305
14/12/2012 20:30	9.141	15/12/2012 10:15	9.199	16/12/2012 00:00	9.307
14/12/2012 20:45	9.143	15/12/2012 10:30	9.201	16/12/2012 00:15	9.301
14/12/2012 21:00	9.146	15/12/2012 10:45	9.201	16/12/2012 00:30	9.303
14/12/2012 21:15	9.148	15/12/2012 11:00	9.207	16/12/2012 00:45	9.305
14/12/2012 21:30	9.154	15/12/2012 11:15	9.211	16/12/2012 01:00	9.303
14/12/2012 21:45	9.160	15/12/2012 11:30	9.219	16/12/2012 01:15	9.307
14/12/2012 22:00	9.167	15/12/2012 11:45	9.217	16/12/2012 01:30	9.309
14/12/2012 22:15	9.164	15/12/2012 12:00	9.214	16/12/2012 01:45	9.311
14/12/2012 22:30	9.164	15/12/2012 12:15	9.215	16/12/2012 02:00	9.307
14/12/2012 22:45	9.166	15/12/2012 12:30	9.217	16/12/2012 02:15	9.313
14/12/2012 23:00	9.161	15/12/2012 12:45	9.221	16/12/2012 02:30	9.311
14/12/2012 23:15	9.160	15/12/2012 13:00	9.226	16/12/2012 02:45	9.313
14/12/2012 23:30	9.162	15/12/2012 13:15	9.226	16/12/2012 03:00	9.312
14/12/2012 23:45	9.169	15/12/2012 13:30	9.224	16/12/2012 03:15	9.312
15/12/2012 00:00	9.169	15/12/2012 13:45	9.228	16/12/2012 03:30	9.314
15/12/2012 00:15	9.171	15/12/2012 14:00	9.232	16/12/2012 03:45	9.312
15/12/2012 00:30	9.163	15/12/2012 14:15	9.236	16/12/2012 04:00	9.314
15/12/2012 00:45	9.161	15/12/2012 14:30	9.237	16/12/2012 04:15	9.310
15/12/2012 01:00	9.164	15/12/2012 14:45	9.241	16/12/2012 04:30	9.312
15/12/2012 01:15	9.163	15/12/2012 15:00	9.243	16/12/2012 04:45	9.314
15/12/2012 01:30	9.163	15/12/2012 15:15	9.244	16/12/2012 05:00	9.314
15/12/2012 01:45	9.168	15/12/2012 15:30	9.245	16/12/2012 05:15	9.315
15/12/2012 02:00	9.165	15/12/2012 15:45	9.247	16/12/2012 05:30	9.316
15/12/2012 02:15	9.167	15/12/2012 16:00	9.249	16/12/2012 05:45	9.315
15/12/2012 02:30	9.173	15/12/2012 16:15	9.256	16/12/2012 06:00	9.311
15/12/2012 02:45	9.176	15/12/2012 16:30	9.260	16/12/2012 06:15	9.317
15/12/2012 03:00	9.196	15/12/2012 16:45	9.260	16/12/2012 06:30	9.321
15/12/2012 03:15	9.201	15/12/2012 17:00	9.264	16/12/2012 06:45	9.320
15/12/2012 03:30	9.202	15/12/2012 17:15	9.268	16/12/2012 07:00	9.316
15/12/2012 03:45	9.202	15/12/2012 17:30	9.268	16/12/2012 07:15	9.318
15/12/2012 04:00	9.203	15/12/2012 17:45	9.266	16/12/2012 07:30	9.321
15/12/2012 04:15	9.191	15/12/2012 18:00	9.268	16/12/2012 07:45	9.314
15/12/2012 04:30	9.185	15/12/2012 18:15	9.270	16/12/2012 08:00	9.314
15/12/2012 04:45	9.181	15/12/2012 18:30	9.272	16/12/2012 08:15	9.312
15/12/2012 05:00	9.178	15/12/2012 18:45	9.276	16/12/2012 08:30	9.314
15/12/2012 05:15	9.178	15/12/2012 19:00	9.278	16/12/2012 08:45	9.311
15/12/2012 05:30	9.175	15/12/2012 19:15	9.282	16/12/2012 09:00	9.309
15/12/2012 05:45	9.179	15/12/2012 19:30	9.280	16/12/2012 09:15	9.313
15/12/2012 06:00	9.179	15/12/2012 19:45	9.280	16/12/2012 09:30	9.313
15/12/2012 06:15	9.178	15/12/2012 20:00	9.280	16/12/2012 09:45	9.313
15/12/2012 06:30	9.169	15/12/2012 20:15	9.286	16/12/2012 10:00	9.313
15/12/2012 06:45	9.169	15/12/2012 20:30	9.286	16/12/2012 10:15	9.312
15/12/2012 07:00	9.171	15/12/2012 20:45	9.287	16/12/2012 10:30	9.316
15/12/2012 07:15	9.180	15/12/2012 21:00	9.290	16/12/2012 10:45	9.316
15/12/2012 07:30	9.180	15/12/2012 21:15	9.294	16/12/2012 11:00	9.316
15/12/2012 07:45	9.183	15/12/2012 21:30	9.292	16/12/2012 11:15	9.315
15/12/2012 08:00	9.180	15/12/2012 21:45	9.292	16/12/2012 11:30	9.317

Date / time	WL (m bdl)	Date / time	WL (m bdl)	Date / time	WL (m bdl)
16/12/2012 11:45	9.312	17/12/2012 01:30	9.356		
16/12/2012 12:00	9.311	17/12/2012 01:45	9.356		
16/12/2012 12:15	9.311	17/12/2012 02:00	9.355		
16/12/2012 12:30	9.311	17/12/2012 02:15	9.355		
16/12/2012 12:45	9.310	17/12/2012 02:30	9.355		
16/12/2012 13:00	9.311	17/12/2012 02:45	9.359		
16/12/2012 13:15	9.314	17/12/2012 03:00	9.360		
16/12/2012 13:30	9.312	17/12/2012 03:15	9.358		
16/12/2012 13:45	9.320	17/12/2012 03:30	9.358		
16/12/2012 14:00	9.319	17/12/2012 03:45	9.360		
16/12/2012 14:15	9.315	17/12/2012 04:00	9.355		
16/12/2012 14:30	9.314	17/12/2012 04:15	9.351		
16/12/2012 14:45	9.320	17/12/2012 04:30	9.347		
16/12/2012 15:00	9.322	17/12/2012 04:45	9.349		
16/12/2012 15:15	9.329	17/12/2012 05:00	9.347		
16/12/2012 15:30	9.327	17/12/2012 05:15	9.347		
16/12/2012 15:45	9.329	17/12/2012 05:30	9.345		
16/12/2012 16:00	9.327	17/12/2012 05:45	9.347		
16/12/2012 16:15	9.329	17/12/2012 06:00	9.344		
16/12/2012 16:30	9.327	17/12/2012 06:15	9.344		
16/12/2012 16:45	9.325	17/12/2012 06:30	9.346		
16/12/2012 17:00	9.331	17/12/2012 06:45	9.345		
16/12/2012 17:15	9.327	17/12/2012 07:00	9.345		
16/12/2012 17:30	9.333	17/12/2012 07:15	9.343		
16/12/2012 17:45	9.341	17/12/2012 07:30	9.340		
16/12/2012 18:00	9.343	17/12/2012 07:45	9.340		
16/12/2012 18:15	9.339	17/12/2012 08:00	9.339		
16/12/2012 18:30	9.339	17/12/2012 08:15	9.337		
16/12/2012 18:45	9.338	17/12/2012 08:30	9.337		
16/12/2012 19:00	9.341	17/12/2012 08:45	9.339		
16/12/2012 19:15	9.340	17/12/2012 09:00	9.336		
16/12/2012 19:30	9.342				
16/12/2012 19:45	9.344				
16/12/2012 20:00	9.345				
16/12/2012 20:15	9.347				
16/12/2012 20:30	9.347				
16/12/2012 20:45	9.346				
16/12/2012 21:00	9.345				
16/12/2012 21:15	9.347				
16/12/2012 21:30	9.348				
16/12/2012 21:45	9.350				
16/12/2012 22:00	9.348				
16/12/2012 22:15	9.354				
16/12/2012 22:30	9.349				
16/12/2012 22:45	9.351				
16/12/2012 23:00	9.353				
16/12/2012 23:15	9.355				
16/12/2012 23:30	9.354				
16/12/2012 23:45	9.352				
17/12/2012 00:00	9.362				
17/12/2012 00:15	9.355				
17/12/2012 00:30	9.363				
17/12/2012 00:45	9.361				
17/12/2012 01:00	9.355				
17/12/2012 01:15	9.356				

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APPENDIX 3
GAS & GROUNDWATER READINGS

*For inspection purposes only.
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Gas monitoring results

Contract:	Landfill Restoration	Test carried out by:	Irish Drilling Ltd.
Location:	Newcastle West	Operators:	DF
Client:	Limerick Co. Council	Date installed:	
Engineer:	Tobin	Date:	07/01/2013

Well/borehole	BH 1	BH 2	BH 3	BH 9	BH 10	BH 10
Date:	03/12/2012	03/12/2012	03/12/2012		04/12/2012	06/12/2012
Methane (CH4), %	58.8	40.6	38.5			
Carbon dioxide (CO2), %	33.10	24.00	12.70			
Oxygen (O2), %	0.0	0.3	1.7			
Atmospheric pressure, mb	1000	1000	1001			
Hex, %	0.66	0.54	0.52			
HydrogenSulphide(H2S),ppm	-10.00	0.00	-10.00			
CarbonMonoxide(CO),ppm	0.00	-1.00	11.00			
Water Level (m)					7.60	7.80

Well/borehole	BH 1	BH 2	BH 3	BH 9	BH 10
Date:	04/12/2012	04/12/2012	04/12/2012		
Methane (CH4), %	59.7	58.6	40.7		
Carbon dioxide (CO2), %	33.50	28.20	12.60		
Oxygen (O2), %	0.0	0.5	1.0		
Atmospheric pressure, mb	999	999	998		
Hex, %	0.66	0.65	0.53		
HydrogenSulphide(H2S),ppm	-10.00	-10.00	-10.00		
CarbonMonoxide(CO),ppm	1.00	-1.00	8.00		
Water Level (m)					

Well/borehole	BH 1	BH 2	BH 3*	BH 9	BH 10
Date:	05/12/2012	05/12/2012	05/12/2012		
Methane (CH4), %	58.7	62.9	N/A		
Carbon dioxide (CO2), %	34.70	29.60	N/A		
Oxygen (O2), %	-0.7	-0.6	N/A		
Atmospheric pressure, mb	1011	1010	N/A		
Hex, %	0.65	0.67	N/A		
HydrogenSulphide(H2S),ppm	-10.00	-10.00	N/A		
CarbonMonoxide(CO),ppm	0.00	0.00	N/A		
Water Level (m)					

* Remarks: Gas tap open on inspection.

Well/borehole	BH 1	BH 2	BH 3	BH 9	BH 10
Date:	06/12/2012	06/12/2012	06/12/2012		
Methane (CH4), %	55.7	63.6	11.1		
Carbon dioxide (CO2), %	34.10	29.50	11.40		
Oxygen (O2), %	0.0	0.0	7.8		
Atmospheric pressure, mb	999	998	998		
Hex, %	0.64	0.69	0.28		
HydrogenSulphide(H2S),ppm	0.00	0.00	0.00		
CarbonMonoxide(CO),ppm	-1.00	1.00	77.00		
Water Level (m)					

Well/borehole	BH 1	BH 2	BH 3	BH 9	BH 10
Date:	07/12/2012	07/12/2012	07/12/2012		
Methane (CH4), %	55.9	56.4	16.7		
Carbon dioxide (CO2), %	31.80	26.20	12.40		
Oxygen (O2), %	0.0	1.3	5.3		
Atmospheric pressure, mb	1008	1008	1009		
Hex, %	0.64	0.64	0.34		
HydrogenSulphide(H2S),ppm	-10.00	-10.00	0.00		
CarbonMonoxide(CO),ppm	0.00	0.00	72.00		
Water Level (m)					

Well/borehole	BH 1	BH 2	BH 3	BH 9	BH 10
Date:	10/12/2012	10/12/2012	10/12/2012		
Methane (CH4), %	52.6	60.4	26.8		
Carbon dioxide (CO2), %	30.60	31.20	12.30		
Oxygen (O2), %	0.0	0.2	1.7		
Atmospheric pressure, mb	1019	1019	1019		
Hex, %	0.53	0.67	0.43		
HydrogenSulphide(H2S),ppm	-10.00	-10.00	-10.00		
CarbonMonoxide(CO),ppm	0.00	-1.00	36.00		
Water Level (m)					

Well/borehole	BH 1	BH 2	BH 3	BH 9	BH 10
Date:	11/12/2012	11/12/2012	11/12/2012		
Methane (CH4), %	49.8	61.5	29.7		
Carbon dioxide (CO2), %	32.80	30.70	12.70		
Oxygen (O2), %	0.0	0.0	0.7		
Atmospheric pressure, mb	1019	1019	1019		
Hex, %	0.60	0.67	0.45		
HydrogenSulphide(H2S),ppm	-10.00	-10.00	-10.00		
CarbonMonoxide(CO),ppm	0.00	-1.00	29.00		
Water Level (m)					

Well/borehole	BH 1*	BH 2	BH 3	BH 9	BH 10
Date:	17/12/2012	17/12/2012	17/12/2012	17/12/2012	
Methane (CH4), %	N/A	60.8	45.1	0.0	
Carbon dioxide (CO2), %	N/A	27.90	11.80	2.00	
Oxygen (O2), %	N/A	0.0	0.0	14.8	
Atmospheric pressure, mb	N/A	990	990	990	
Hex, %	N/A	0.67	0.56	0.01	
HydrogenSulphide(H2S),ppm	N/A	-10.00	-10.00	-10.00	
CarbonMonoxide(CO),ppm	N/A	1.00	8.00	3.00	
Water Level (m)					

*Remarks: Gas tap open on inspection.

Notes: Gas levels are % gas and have not been converted to % L.E.L.
 Tests carried out with G435 - Infra-red Gas Analyser
 Water levels are recorded as depth to top of water from ground level.