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REPORT OF BOREHOLE: CRR 212

SHEET: 1 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Fairfield and Park Rd
 JOB NO: 107632034

COORDS: 501997.65 m E 6956616.82 m N MGA94 56
 SURFACE RL: 3.42 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 35.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 26/8/10
 CHECKED: NK DATE: 18/10/10

Drilling			Sampling	Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AS			0	3.42			CI	Sandy CLAY Topsoil medium plasticity, dark brown				
				0.20			GP	Sandy GRAVEL Ash fine to medium grained, black				L
			1	2.42	SPT 1.00-1.45 m 2, 2, 3 N=5		CH	Sandy CLAY high plasticity, dark grey with orange brown				M F - St
			2	1.42			CH	CLAY high plasticity, pale grey				F
WB			3		U50 2.50-2.95 m PP = 90 kPa							
			4	-0.48	SPT 4.00-4.45 m 6, 10, 18 N=28		SC	Clayey SAND fine to coarse grained, pale grey and pale orange brown, trace coarse gravel, Residual soil				W MD
			5		SPT 5.50-5.56 m 30/60 mm							VD
		6						For Continuation Refer to Sheet 2				
		7										
		8										
		9										
		10										

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GAP gINT FN. F01a
RL3

GAP 8.03 LIB: GLE Log GAP NON-CORED FULL PAGE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:39 8.2.007



REPORT OF BOREHOLE: CRR 212

SHEET: 2 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Fairfield and Park Rd
 JOB NO: 107632034

COORDS: 501997.65 m E 6956616.82 m N MGA94 56
 SURFACE RL: 3.42 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 35.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 26/8/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)		
				0										
				1										
				2										
				3										
				4										
				5										
				6	6.00		Continuation of Sheet 1							
					-2.68		CORE LOSS							
					6.30		SANDSTONE	DW			6.11: DS, 43°, Pl, Ro, Ct, 2 mm, clay & rock fragments			
					-2.88		fine to medium grained, orange brown				6.40: DS, 10°, Un, Ro, Ct, 40 mm, clay & rock fragments			
							multiple fine black siltstone bands							
			95	90										
				7										
											7.00: B, 17°, Un, Ro, Cn			
				8	7.80		becoming coarse grained, some minor conglomerate							
					4.38		bands, grey							
					8.00		multiple black siltstone inclusions	FR						
					-4.58									
				9	8.48		fine grained							
					-5.06									
				10	9.24		conglomerate band							
			100	95	-5.82									

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GAP gINT FN. F02b
RL3

GAP 8.03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:58 8.2.007



REPORT OF BOREHOLE: CRR 212

SHEET: 3 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Fairfield and Park Rd
 JOB NO: 107632034

COORDS: 501997.65 m E 6956616.82 m N MGA94 56
 SURFACE RL: 3.42 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 35.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 26/8/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description			Defect Information			
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)
								EL 0.03 VL 0.01 J 0.1 M 0.3 H 3 VH 10 EH			5 10 15 20 25 30 35
			100	95	10		SANDSTONE fine to medium grained, orange brown	FR			
			100	100	11					11.30: C, 10°, Un, Ro, Cn	
					11.30						
					-7.88						
					11.80						
					-8.38						
					12					11.98: B, 3°, Un, Ro, Cn	
					13						
			100	100	13		CONGLOMERATE fine to coarse grained, pale grey				
					13.03						
					13.23		SILTSTONE fine grained, dark grey and pale grey				
					-9.81		SANDSTONE medium to coarse grained, pale grey				
					14						
					14.17		becoming fine grained			14.28: B, 19°, Un, Ro, Cn, siltstone band	
					-10.75						
					15						
					15.38		becoming coarse grained				
					-11.96						
					16						
			100	85	16		minor conglomerate band			16.20: CS, 40°, Un, Ro, Ct, 50 mm, clay & rock fragments	
					15.90						
					-12.48						
					16.14		SILTSTONE fine grained, dark grey with some pale grey bands, bedding @ 10° bands of fine grained sandstone				
					-12.72						
					17						
					18						
					19						
			100	95	19						
					19.65		SANDSTONE fine to coarse grained, pale grey, minor bands of conglomerate bedding @ 10°			19.55: CS, 10°, Un, Ro, Ct, Clay & rock fragments	
					-16.23						
					20						

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GAP gINT FN. F02b
RL3

GAP 8.03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:58 6.2.007



REPORT OF BOREHOLE: CRR 212

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Fairfield and Park Rd
 JOB NO: 107632034

COORDS: 501997.65 m E 6956616.82 m N MGA94 56
 SURFACE RL: 3.42 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 35.00 m

SHEET: 4 OF 5
 DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 26/8/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description				Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)	
								EL 0.03 VL 0.03 J 0.1 M 0.3 H 1 VH 10 EH					
		100	95	20			SANDSTONE fine to coarse grained, pale grey, minor bands of conglomerate bedding @ 10°	FR					
				21						21.40: B, 11°, Un, Ro, Cn, siltstone band			
			100	22	100					21.87: B, 11°, Un, Ro, Cn, siltstone band			
				23									
				24									
			100	25	100								
				26									
				27									
		100	75	27.10			SILTSTONE fine grained, pale grey, with some coarse grains						
				27.28			CONGLOMERATE fine to medium grained, pale grey with blue grey						
				27.65			SANDSTONE fine grained, pale grey						
				28			coarse grains of dark grey siltstone up to 60 mm			27.65: CS, 0°, Pl, Sm, Ct, 30 mm, clay & rock fragments 27.69: CS, 2°, Pl, Sm, Ct, 60 mm, clay & rock fragments 27.90: CS, 10°, Un, Ro, Ct, 100 mm, clay & rock fragments			
							SILTSTONE fine grained, dark grey, bands of fine grained sandstone			28.40: DS, 0°, Un, Sm, Ct, 25 mm, clay			
				29						28.63: DS, 0°, Pl, Ro, Ct, 15 mm, clay 28.74: DS, 3°, Pl, Sm, Ct, 10 mm, clay 28.80: DS, Pl, Sl, Ct, 10 mm, clay			
				29.15			pale grey						
				29.60			grey						
		100	100	30									

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GAP gINT FN. F02b
RL3

GAP 8.03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:58 6.2.007



REPORT OF BOREHOLE: CRR 212

SHEET: 5 OF 5

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Fairfield and Park Rd
 JOB NO: 107632034

COORDS: 501997.65 m E 6956616.82 m N MGA94 56
 SURFACE RL: 3.42 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 35.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 26/8/10
 CHECKED: NK DATE: 18/10/10

Drilling					Field Material Description				Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)	
NMLC				30	30.28		SILTSTONE fine grained, dark grey, bands of fine grained sandstone pale grey, bedding less visible bedding @ 2°	FR		32.14: DS, 0°, Pl, Sm, Ct, 10 mm, clay & rock fragments 32.35: DZ, 3°, Pl, Sm, Ct, 100 mm, Clay 33.00: DS, 5°, Pl, Sm, Ct, 70 mm, Clay			
					26.86								
		100	100										
					31								
					32								
					33								
					34								
		100	85										
					35								
					36								
					37								
					38								
					39								
					40								
					35.00								

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GAP gINT FN. F02b
RL3

GAP 8.03 LIB: GLE Log GAP CORED BOREHOLE 107632034_ACO.GPJ <<DrawingFile>> 29/11/2010 13:58 6.2.007



REPORT OF CORE PHOTOGRAPHS: CRR 212

CLIENT: Aecom Australia Pty Ltd
PROJECT: Cross River Rail
LOCATION: Fairfield / Park Rd
JOB NO: 107632034

COORDS: 0501997 m E 6956616 m N
SURFACE RL: 3.42 DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 35.2 m

DEPTH RANGE: 6.0-22.0 m
DRILL RIG: Fox B40
DRILLER: Schneider Drilling Pty Ltd
LOGGED: RCD DATE: 26/08/10
CHECKED: NK DATE: 4/10/10





REPORT OF CORE PHOTOGRAPHS: CRR 212

CLIENT: Aecom Australia Pty Ltd
PROJECT: Cross River Rail
LOCATION: Fairfield / Park Rd
JOB NO: 107632034

COORDS: 0501997 m E 6956616 m N
SURFACE RL: 3.42 DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 35.2 m

DEPTH RANGE: 22.0-35.2 m
DRILL RIG: Fox B40
DRILLER: Schneider Drilling Pty Ltd
LOGGED: RCD DATE: 26/08/10
CHECKED: NK DATE: 4/10/10





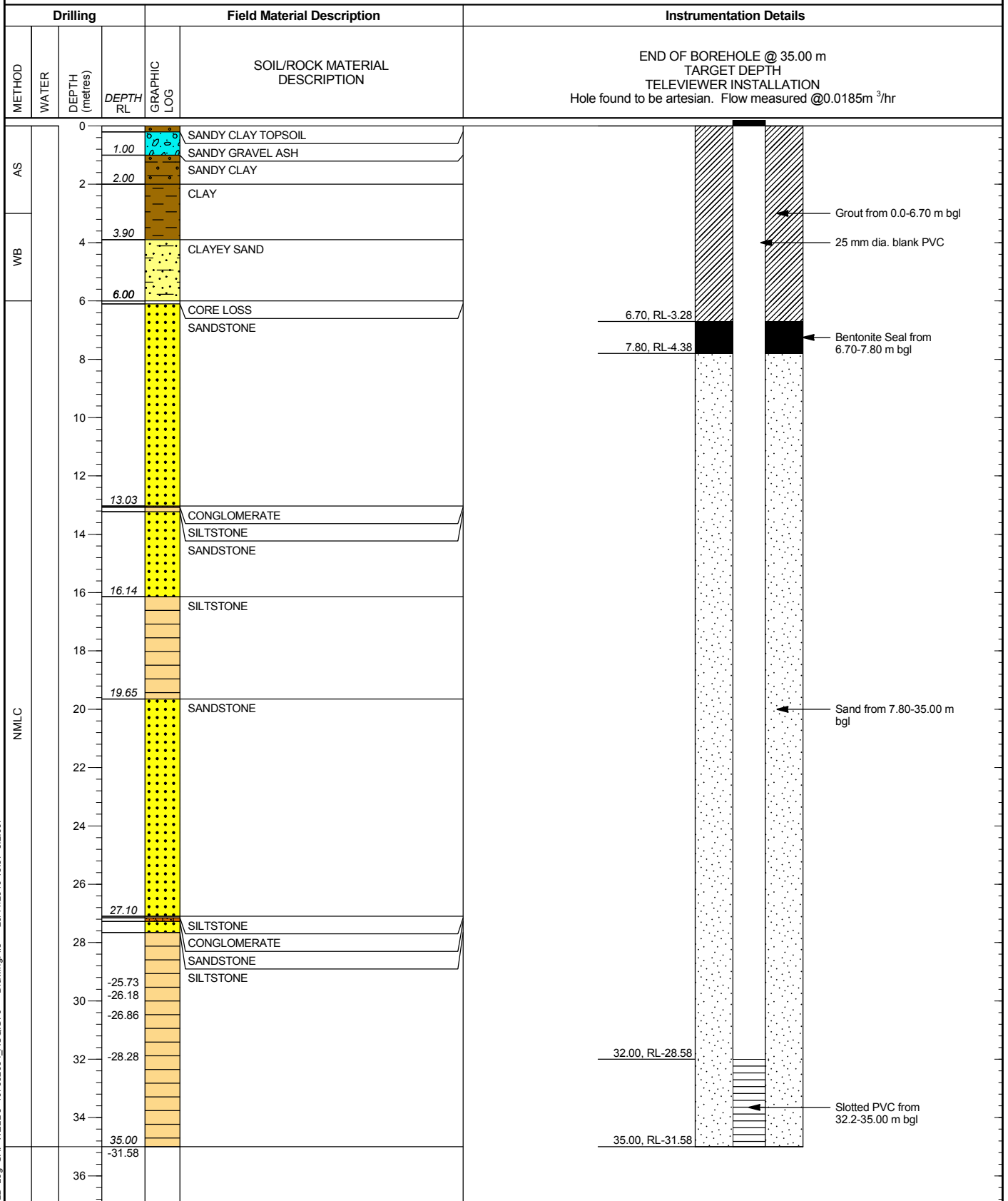
REPORT OF STANDPIPE INSTALLATION: CRR 212

SHEET: 1 OF 1

CLIENT: Aecom Australia Pty Ltd
 PROJECT: Cross River Rail
 LOCATION: Fairfield and Park Rd
 JOB NO: 107632034

COORDS: 501997.65 m E 6956616.82 m N MGA94 56
 SURFACE RL: 3.42 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 35.00 m

DRILL RIG: FOX B40
 CONTRACTOR: Schneider Drilling Pty Ltd
 LOGGED: RCD DATE: 26/8/10
 CHECKED: NK DATE: 18/10/10



GAP 8.03 LIB: GLE Log GAP WELL 3 -107632034_ACO.GPJ <-DrawingFile>> 29/11/2010 15:37 8.2.007

This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

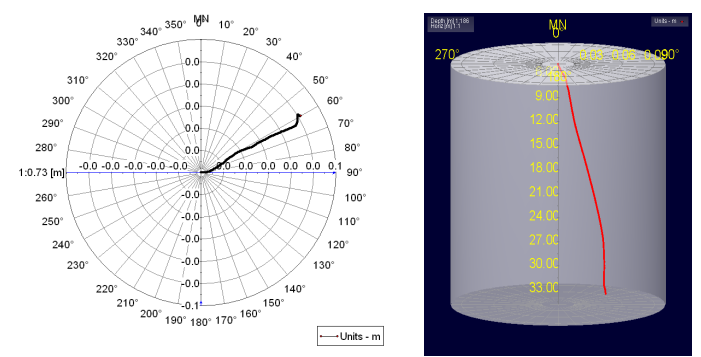
GAP gINT FN. F17
RL1



GEOPHYSICAL RECORD OF BOREHOLE: CRR 212

PROJECT	Cross River Rail	PROJECT #	107632034
CLIENT	Department of Transport and Main Roads	DATE	12/10/2010

DEVIATION DATA



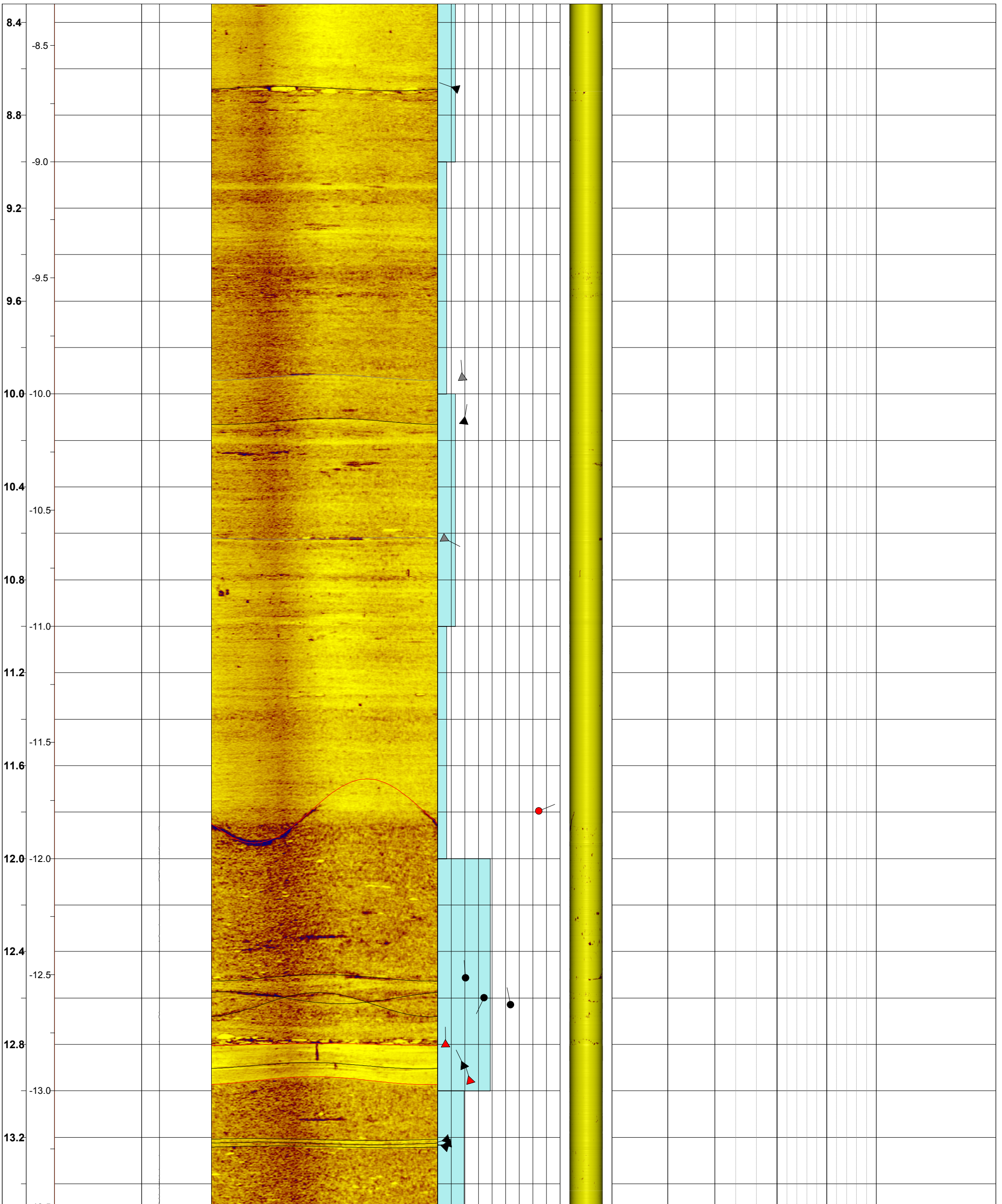
LOCATION-	Fairfield Rd & Park Rd	LOGGED BY-	RCD
EASTING-	502018 m E	LOGGED DATE-	26/8/10
NORTHING-	6956600 m N	LOGGING DATUM-	
ELEVATION-		LOGGED DEPTH-	34.19 m
DRILLED DEPTH-	35.00 m	DIAMETER-	
PLUNGE-	-90°	AZIMUTH-	000
CASING-	DEPTH-	DRAWN BY-	RCD
		REVIEWED BY-	TR
		FILE NAME-	CRR212-U.HED.WCL

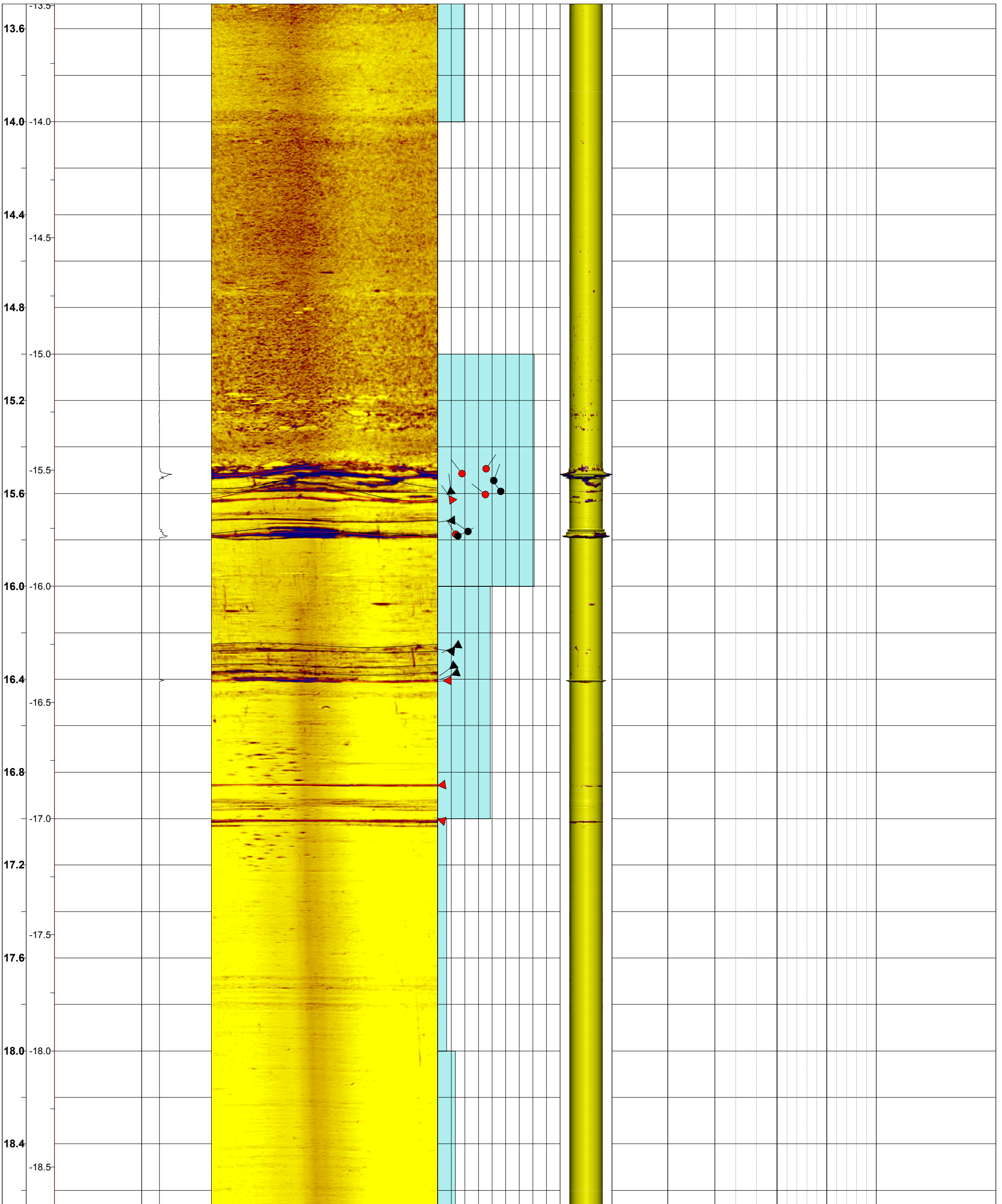
Lithology

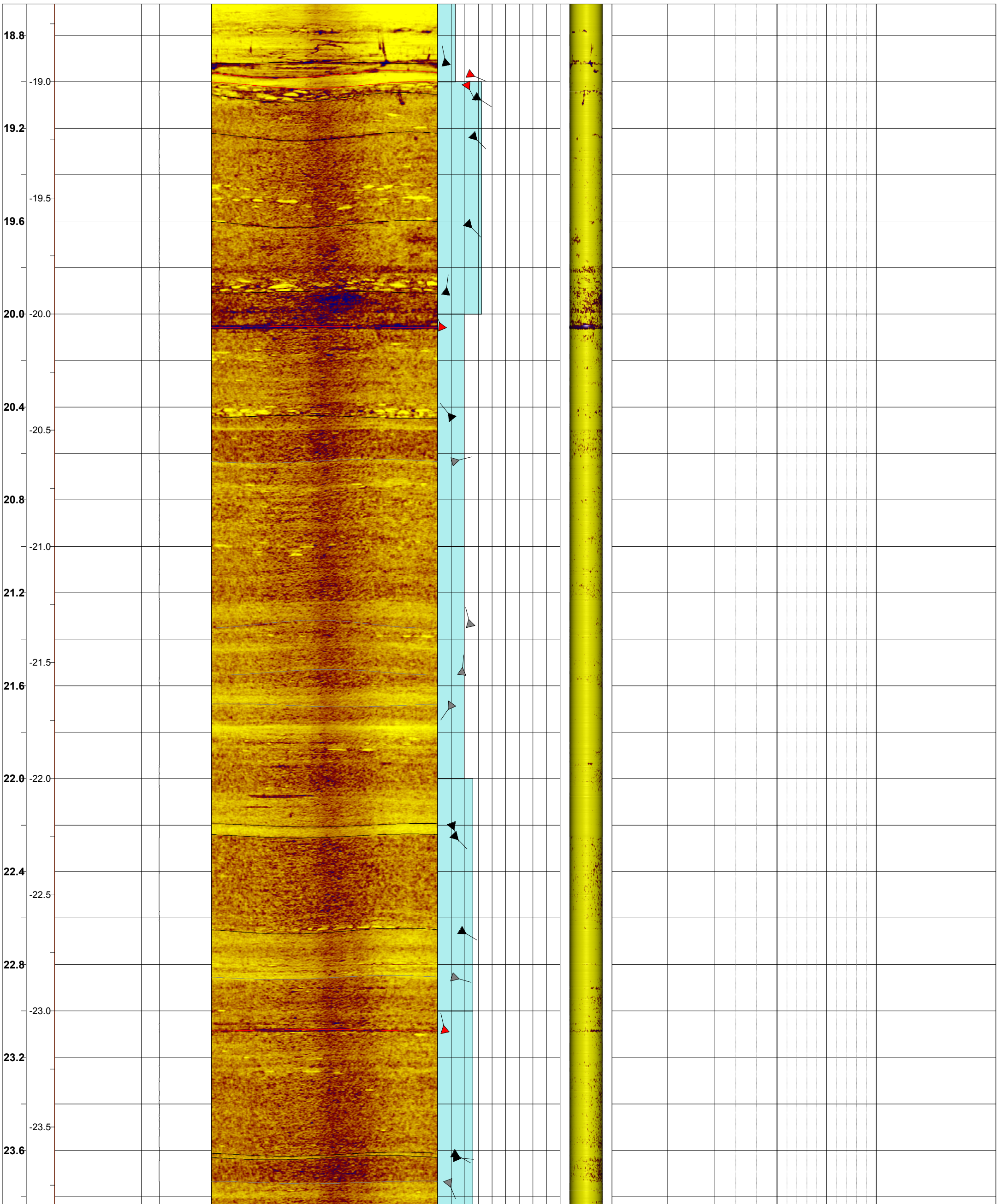
Interpreted Structures

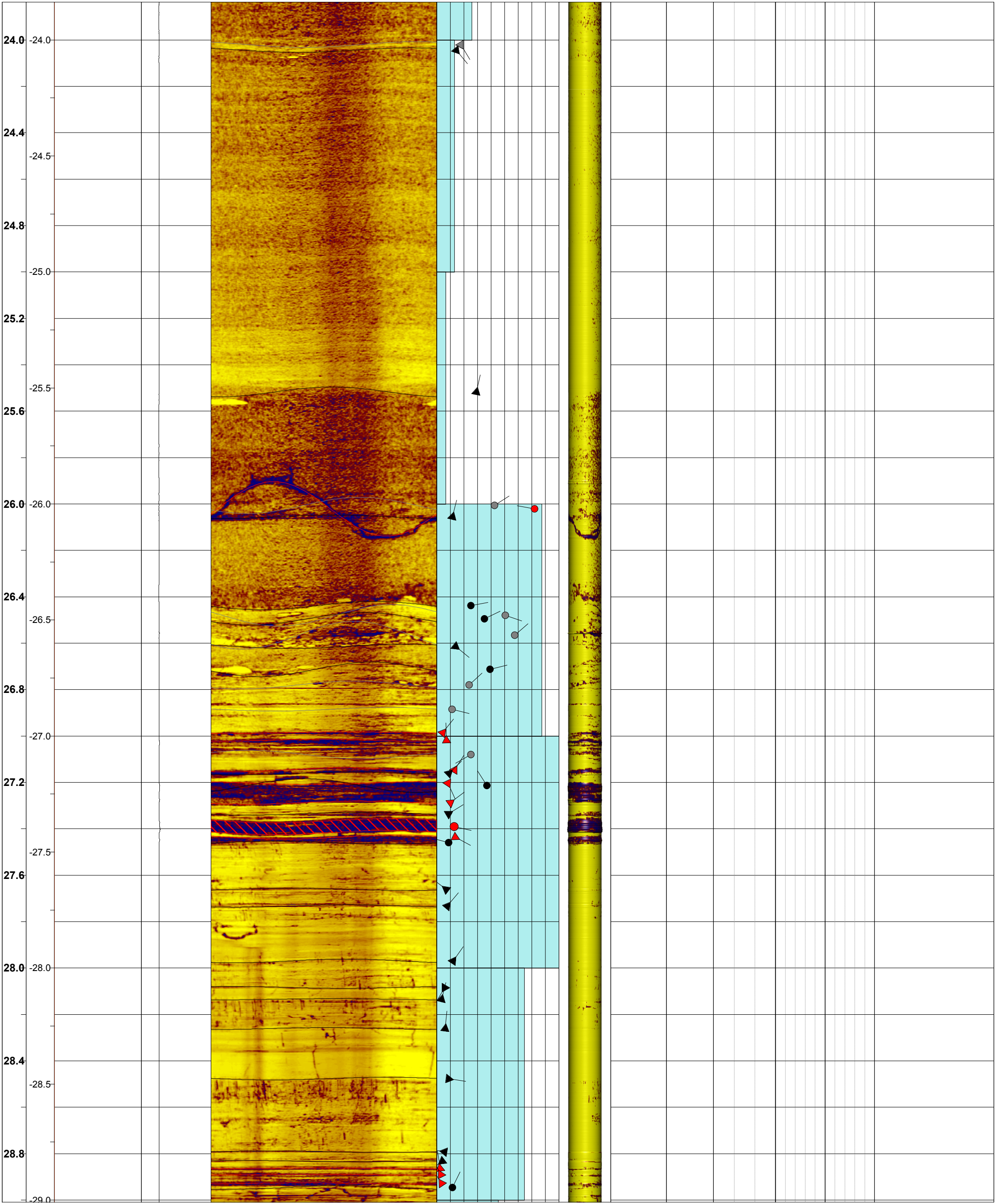
- Joint - Medium Confidence
- Joint - High Confidence
- Infilled Seam - High Confidence
- ▼ Bedding - Medium Confidence
- ▼ Bedding - Low Confidence
- ▲ Bedding - High Confidence
- Joint - Low Confidence
- Decomposed Seam - High Confidence

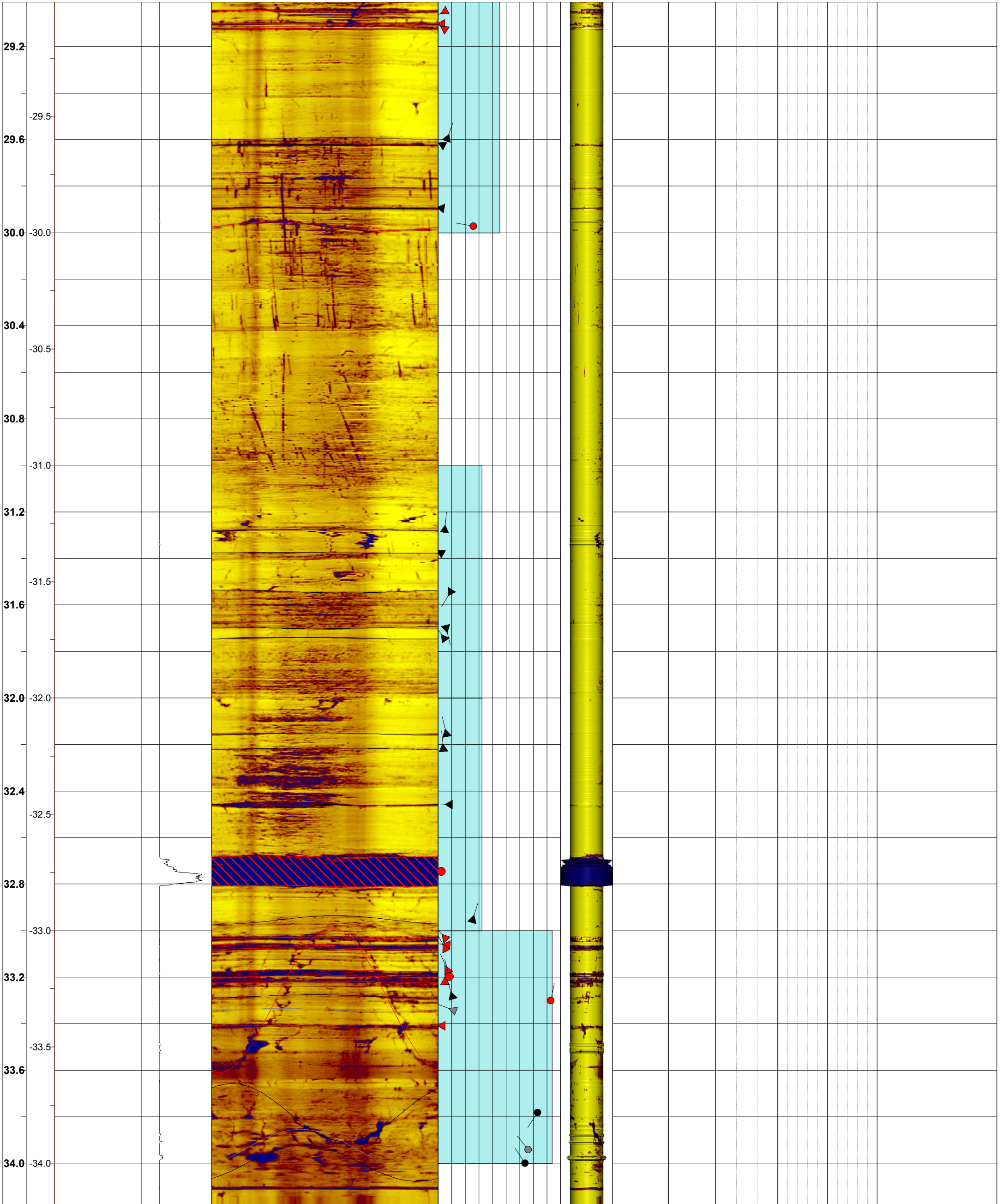
Depth 1:15	TELEVIEWER DATA					CORE DATA						
	RL	NATURAL GAMMA 0 cps 300	ATV - Caliper 0 mm 300	Amplitude 0° 90° 180° 270° 0°	Structure Orientations 0 90	3D log 293°	Core Photo	Lithology	Logged FF 0 30	RQD 0 100	TCR 0 100	Defect Description
				Interpreted Structures 0° 90° 180° 270° 0°	ATV FF 0 counts/m 14		(Refer to detailed core log, provided separately)					
5.2												
5.6												
6.0												
6.4												
6.8												
7.2												
7.6												
8.0												

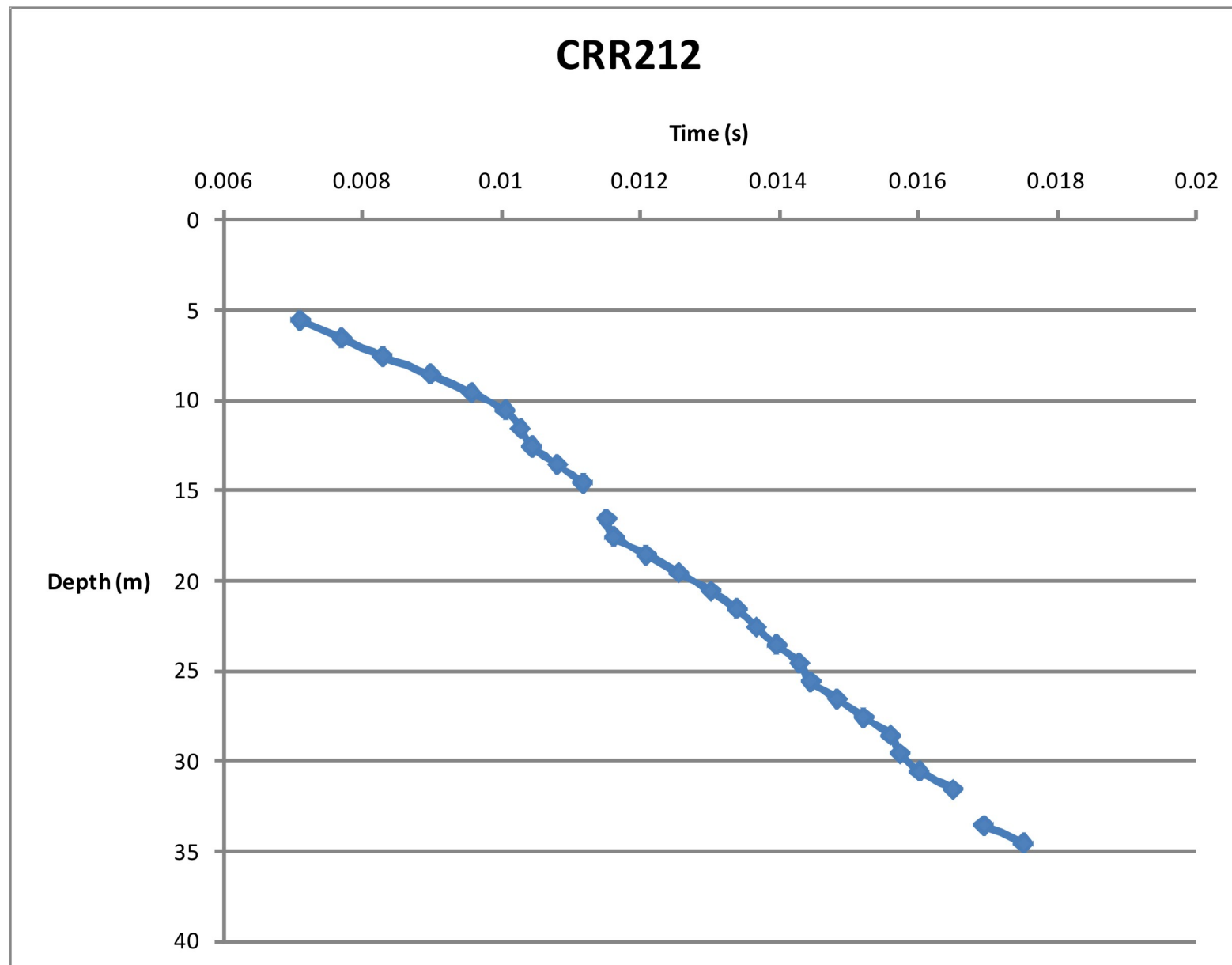












Geophone Depth (m)		Interval velocity (P wave m/s)
from	to	
5.6	6.6	1664
6.6	7.6	1701
7.6	8.6	1461
8.6	9.6	1704
9.6	10.6	2036
10.6	11.6	4592
11.6	12.6	6049
12.6	13.6	2737
13.6	14.6	2742
14.6	15.6	*
15.6	16.6	*
16.6	17.6	*
17.6	18.6	2150
18.6	19.6	2151
19.6	20.6	2151
20.6	21.6	2702
21.6	22.6	3503
22.6	23.6	3504
23.6	24.6	3008
24.6	25.6	6397
25.6	26.6	2604
26.6	27.6	2604
27.6	28.6	2605
28.6	29.6	7109
29.6	30.6	3616
30.6	31.6	2069
31.6	32.6	*
32.6	33.6	*
33.6	34.6	1747

Note:

* - 1st arrival not clear due to noise

Calculations done without accounting for borehole deviation

	CLIENT Department of Transport and Main Roads		PROJECT Cross River Rail	
	DRAWN GDK	DATE OCT 4	TITLE CRR212 VSP	
	CHECKED TR	DATE		
	SCALE NTS	PROJECT No 000-107632034	FIGURE No	REV No A3