Appendix A

ASS Field Observations and Borelogs

Client	00	
Client:	QR .	

Project: Jilalan Acid Sulfate Soils Investigation Project Number: 30420-005 File Name: Borelogs Driller: Connell Hatch Commenced: 30/08/07 Completed: 30/08/07 Location: Jilalan Easting: 0 Northing: 0 Elevation: 5

Method: Excavator

Sheet: 1 of 1

Investigation **Observations and Strata Soil Description** pН Information Information pHF pHFOX Moisture Content Sample Taken Material Type; Colour; Plasticity Or Particle Elevation (m) Groundwater **Graphic Log** Observations Depth (m) Soil Code Characteristics; Structure Depth 2 4 6 8 10 12 2 4 6 8 10 12 . 1 1 Sandy Loam SPOCAS Dark yellowish brown (10YR 4/4) to dark brown (10YR 3/3) Fine sand and silt present SPOCAS SPOCAS 1.0 4.0--1.0 SPOCAS 3.0-2.0 SPOCAS 2.0 More sand than above 30% dark grayish (10YR 4/2) mottling present Sandy Clay Loam Dark yellowish brown (10YR 4/4) to brown (10YR SPOCAS 4/3) 2.0-3.0 SPOCAS 3.0 SPOCAS 50% mottling of brown (10YR 4/4) and gray (10YR 5/1) 4.0 1.0--4.0 SPOCAS Light Clay Dark yellowish brown (10YR 4/6) with grey (10YR SPOCAS 5/1) mottling End of Borehole 0.0-5.0 -5.0 Moisture Key Particle Size Distribution Logged By: Elizabeth WarryJate: 22/11/07 D Dry M Moist W Wet Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to 2.36mm Medium 6mm to 20mm Medium 0.2mm to 0.6mm 0.075mm to 0.2mm Checked By: Chris Bignill Date: 22/11/07 Fine 2.36mm to 6mm Fine

Client: QR

Driller: Connell Hatch

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Investigation **Observations and Strata Soil Description** pН Information Information pHF pHFOX Moisture Content Sample Taken Material Type; Colour; Plasticity Or Particle Elevation (m) Groundwater **Graphic Log** Observations Depth (m) Soil Code Characteristics; Structure Depth 2 4 6 8 10 12 2 4 6 8 10 12 . . τ. 1 1 . Loam SPOCAS Dark Brown No plasticity (10YR 3/3) Sandy Loam Dark brown SPOCAS (10 YR 3/3) SPOCAS 1.0 4.0--1.0 SPOCAS Loamy Sand Brown Organic matter present (10YR 4/3) 3.0-2.0 SPOCAS 2.0 Low plasticity Silty Clay Very dark grayish brown (10YR 3/2) SPOCAS Sandy fines present Light Clay Very dark grayish brown (10YR 3/2) with reddish brown (5YR) mottles Sandy Clay Brown (10YR 4/3) to dark yellowish brown 2.0-—3.0 SPOCAS 3.0 (10YR 3/6) SPOCAS Plastic Silty Light Clay Very dark greyish brown 10YR 3/2 with reddish brown (5YR) and yellowish brown (10YR) mottles 4.0 1.0 _4.0 SPOCAS Subangular gravel ~ Coarse Sandy Clay with Gravel fragments Dark reddish brown (5YR 3/4) End of Borehole 5.0 0.0+ -5.0 Moisture Key Particle Size Distribution Logged By: Elizabeth WarryJate: 22/11/07 D Dry M Moist Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to 2.36mm Medium 6mm to 20mm Medium 0.2mm to 0.6mm W Wet Checked By: Chris Bignill Date: 22/11/07 Fine 2.36mm to 6mm Fine 0.075mm to 0.2mm

Client: QR

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Project: Jilalan Acid Sulfate Soils Investigation Project Number: 30420-005 File Name: Borelogs Commenced: 30/08/07 Completed: 30/08/07 Location: Jilalan Easting: 0 Northing: 0 Elevation: 5

Method: Excavator

Sheet: 1 of 1

	Investigation			Soil Description		pł	l	Observations and Strata Information					
Groundwater	Sample Taken	Depth	Soil Code	Material Type; Colour; Plasticity Or Particle Characteristics; Structure	Moisture Content	pHF 2 4 6 8 10 12	pHFOX	Observations	Graphic Log	Elevation (m)			
ō	SPOCAS SPOCAS SPOCAS SPOCAS SPOCAS SPOCAS SPOCAS SPOCAS SPOCAS	1.0 2.0 3.0 4.0 6.0		Clay Loam Dark brown (7.5YR 3/2) to dark yellowish brown (10YR 4/4) Sandy Clay Loam Yellowish brown (10YR 5/4) to dark brown (10YR 3/3) and dark yellowish brown (10YR 4/4) with gray (10YR 5/1) mottling Light Clay Gray (10YR 5/1) to dark gray (10YR 4/1) with yellowish brown (5 YR 4/6) mottles ranging from 5% to 30% Sandy Clay Loam Brown (10YR 4/3) End of Borehole				Silty fines present Clay content increases with depth Sandy fines present	°	4.0 3.0 -1.0 -2.0			
Moiss D [M N W V	Aoist	9.0		Particle Size Distribution Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to Medium 6mm to 20mm Medium 0.2mm t Fine 2.36mm to 6mm Fine 0.075mr	o 0.6m	าฑ		y: Elizabeth War 3y: Chris Bignill					

Commenced: 30/08/07 Completed: 30/08/07 Location: Jilalan Project: Jilalan Acid Sulfate Soils Investigation Easting: 0 Northing: 0 Elevation: 5 Method: Excavator

Sheet: 1 of 1

File Name: Borelogs **Driller:** Connell Hatch

Project Number: 30420-005

Client: QR

I	nvestigatio Informatior	n 1		Soil Description						рH			Observations and Strata Information					
Groundwater	Sample Taken	Depth	Soil Code	Material Type; Colour; Plasticity Or Particle Characteristics; Structure	Moisture Content	2	4	рН 6	10 1:	2 2 12	pHF (DX 8 10	Observations	Graphic Log	Elevation (m)	Depth (m)		
	SPOCAS SPOCAS			Silty Clay Loam Yellowish brown (10YR 5/3) to dark yellowish brown (10YR 4/4)									Hard set, dry and brittle Low plascticity when wet Very low to low plascticity when wet	$\langle \chi \rangle \langle \chi \rangle$				
	SPOCAS	- - 1.0- -		Sandy Clay Dark yellowish brown (10YR 2/4) to yellowish brown									Silty fines present wtih very low plasticity	λ	4.0	- - 		
	SPOCAS	-		Silty Clay									Sticky when wet with very low plasticity and			- - -		
	SPOCAS	2.0		Brown (10YR 4/3) to dark brown (10YR 3/3) and dark yellowish brown (10YR 3/6 to 10YR 3/4)									slightly loamy	HHH	3.0			
	SPOCAS													HH				
	SPOCAS	3.0— — — —												HH	2.0-	3.0 		
	SPOCAS			Silty Light Clay Brown (10YR 4/3) to dark gray (10YR 4/1)	-								Plastic Dark yellowish brown	HHH	1.0-	+ + + + + + 4.0		
	SPOCAS												mottling present	HHH				
	SPOCAS	- - - 5.0-													0.0	+ - - 		
	SPOCAS	-		Sandy Clay Dark grey (10YR 4/1)									Very soft, sticky low plasticity with sandy fines present					
		- - 6.0-		End of Borehole											-1.0	+ - 6.0		
Moist D E M N W V	loist	<u> </u>		Particle Size Distribution Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to Medium 6mm to 20mm Medium 0.2mm t Fine 2.36mm to 6mm Fine 0.075m	o 0.6m	m	n		 				y: Elizabeth War By: Chris Bignill					

Client: QR

Project: Jilalan Acid Sulfate Soils Investigation Project Number: 30420-005 File Name: Borelogs Driller: Connell Hatch Commenced: 30/08/07 Completed: 30/08/07 Location: Jilalan Easting: 0 Northing: 0 Elevation: 10

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Investigation Information				Soil Description				pł	ł		Observations and Strata Information					
	Sample Taken	Depth		Material Type; Colour; Plasticity Or Particle Characteristics; Structure	Moisture Content	2	pH 4 6	F 8 10	12				Observations	Graphic Log	Elevation (m)	
	SPOCAS			Loam Brown (7.5YR 3/2) to dark brown (7.5YR 4/3)									Silty fines present	$\frac{1}{2}$		+
	SPOCAS	-												$l_l l_l l_l$		
	SPOCAS	- - 1.0 - -		Light Clay Brown (7.5YR 4/4) with brownish yellow (10YR 6/8)/yellowish brown (10YR 5/8) and grayish brown (10YR 5/2)/gray (10YR 6/1) mottling											9.0	
	SPOCAS	-														
	SPOCAS	- 2.0— -											Sand and gravel layer		8.0	-
	SPOCAS	-											present (approx 0.5m thickness in profile)			
	SPOCAS	- - 3.0 - -													7.0	-
	SPOCAS	-		Sandy Clay Brown (10YR 5/3) to very dark brown (7.5YR 5/2) with brownish yellow (10YR 6/8) mottling to gray (2.5YR 5/1) sandy clay										/ / /		
	SPOCAS	4.0												/	6.0	
	SPOCAS	-											Layer of clayey sand (approx 0.5m thickness)	/		
	SPOCAS	- - 5.0 -											Light yellowish brown (2.5YR 6/3) loamy material present		5.0-	+
		-		End of Borehole												+
D	oist	L		Particle Size Distribution Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm t Medium 6mm to 20mm Medium 0.2mm Fine 2.36mm to 6mm Fine 0.075m	to 0.6n	nm							By: Elizabeth War			

Client: QR

Project: Jilalan Acid Sulfate Soils Investigation Project Number: 30420-005 File Name: Driller: Connell Hatch Commenced: 8/11/07 Completed: 8/11/07 Location: Jilalan Easting: 0 Northing: 0 Elevation: 12 Method: Drill Rig

Sheet: 1 of 1

Dri	Driller: Connell Hatch Method: Drill Rig																								
	Investigatio Informatio			Soil Description				pł	H				Observatior Inforr	is and s nation	Strata										
Groundwater	Sample Taken	Depth	Soil Code							2 12		F OX	0	Observations	Graphic Log	Elevation (m)	Depth (m)								
	SPOCAS SPOCAS			Clay Loam Brown (10YR 4/3) Light Clay Dark yellowish brown (10YR 4/4) Medium Heavy Clay Dark gray (10YR 4/1) Medium to Light Medium Clay Light olive brown (2.5Y 5/3)											Silty fines and fine black nodules present		-	-							
	SPOCAS	- - 1.0 - -		Not descriptions recorded for the profile											Platy structured profile		11.0-	- 							
	SPOCAS																-	-							
	SPOCAS	- 2.0— - -															10.0-								
	SPOCAS	- - - 3.0-		End of Borehole													- - - 9 0-	- - - - 							
Moisture Key D Particle Size Distribution Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to 2.36mm M Moist Medium 6mm to 20mm Medium 0.2mm to 0.6mm W Wet Fine 2.36mm to 60mm Fine 0.075mm to 0.2mm														y: Elizabeth War By: Chris Bignill		: 22/	1/07								

Client: QR

Project: Jilalan Acid Sulfate Soils Investigation Project Number: 30420-005 File Name: Borelogs

Commenced: 12/11/07 Completed: 12/11/07 Location: Jilalan Easting: 0 Northing: 0 Elevation: 12

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	riller: Conno			Eleva Meth			Rig										1			
	Investigatio	on n		Soil Description	il Description					p	H						Observatio Infor	ns and mation	Strata	
Groundwater	Sample Taken	Depth	Soil Code	Material Type; Colour; Plasticity Or Particle Characteristics; Structure	Moisture Content	2	4	pHF 6		0 12	2 12	2 4	рНІ 4 _6)	Observations	Graphic Log	Elevation (m)	Depth (m)
	SPOCAS	-	-	Sandy Loam Dark brown (10YR 3/3) to dark yellowish brown (10YR 4/4)													Fine to medium grade sand	/ /	-	-
	SPOCAS		-														Plastic with fine to medium grain sand		-	-
	SPOCAS	- 1.0 - - -	-															1 1 1	11.0-	
	SPOCAS		-	Sandy Clay Loam Dark yellowish brown (10YR 4/4) to yellowish brown (10YR 5/6)															- - - - -	-
	SPOCAS	2.0	-															\ \ \ \	10.0- - - -	2.0
	SPOCAS		-	Sandy Loam Gray (2.5YR 6/1)															-	-
	SPOCAS	3.0	-															\ \ \	9.0- - - -	3.0
	SPOCAS	- - - 4.0-	-	End of Borehole															8.0-	- - - - - 4.0
Mo	isture Key Dry			Particle Size Distribution Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to	2.36m	I					<u> </u> 		Lo	gg	jec	B	y: Elizabeth Wa	rry Date		
M	Moist Wet			Medium 6mm to 20mm Medium 0.2mm Fine 2.36mm to 6mm Fine 0.075m	to 0.6m	nm	I						Ch	ec	:ke	ed I	By: Chris Bignill	Date	:: 22/′	11/07

Commenced: 13/11/07 Completed: 13/11/07 Location: Jilalan Project: Jilalan Acid Sulfate Soils Investigation Easting: 0 Northing: 0 Elevation: 10 Method: Drill Rig

Sheet: 1 of 1

File Name: Borelogs **Driller:** Connell Hatch

Client: QR

Project Number: 30420-005

Investigation **Observations and Strata Soil Description** pН Information Information pHF pHFOX Moisture Content Sample Taken Material Type; Colour; Plasticity Or Particle Elevation (m) Groundwater **Graphic Log** Observations Depth (m) Soil Code Characteristics; Structure 2 4 6 8 10 Depth 2 4 6 8 10 12 12 1 1 1 Silty Loam SPOCAS Organic matter and Brown (10YR 5/3) some mixed grade gravel present Flecks of white calcerous material present SPOCAS Small black nodules Light Clay present Yellowish brown (10YR 5/4) to light olive brown with brownish yellow (10YR 6/6 to 10YR 6/8) and light gray (10YR 7/1) mottling Platy structure SPOCAS 1.0 9.0--1.0 Sandy coarse fragments and small black nodules present SPOCAS Small black, red and yellow nodules present 2.0 8.0-2.0 SPOCAS Sandy Clay Loam Yellowish brown (10YR 5/4) with light grey (2.5YR 7/1) mottling SPOCAS Flecks of black present Sandy Loam Yellowish brown (10YR 5/6) End of Borehole SPOCAS 3.0 7.0--3.0 SPOCAS 4.0 60--4.0 Moisture Key Particle Size Distribution Logged By: Elizabeth WarryDate: 22/11/07 D Dry M Moist W Wet Gravel Coarse 20mm to 63mm Sand Coarse 0.6mm to 2.36mm Medium 6mm to 20mm Medium 0.2mm to 0.6mm Checked By: Chris Bignill Date: 22/11/07 Fine 2.36mm to 6mm Fine 0.075mm to 0.2mm