



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Public Works and Government Services Canada
Canada Place/Place du Canada
10th Floor/10e étage
9700 Jasper Ave/9700 ave Jasper
Edmonton
Alberta
T5J 4C3
Bid Fax: (780) 497-3510

**SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution
Public Works and Government Services Canada
Canada Place / Place du Canada
10th Floor / 10e étage
9700 Jasper Ave / 9700 ave Jasper
Edmonton
Alberta
T5J 4C3

Title - Sujet Wharf Repair - Hay River	
Solicitation No. - N° de l'invitation EW038-202022/A	Amendment No. - N° modif. 002
Client Reference No. - N° de référence du client DFO-EW038-202022	Date 2020-01-15
GETS Reference No. - N° de référence de SEAG PW-\$PWU-201-11761	
File No. - N° de dossier PWU-9-42185 (201)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2020-01-24	Time Zone Fuseau horaire Mountain Standard Time MST
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Ho (RPC), Hector	Buyer Id - Id de l'acheteur pwu201
Telephone No. - N° de téléphone (780) 901-0989 ()	FAX No. - N° de FAX (780) 497-3510
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Solicitation No. - N° de l'invitation
EW038-202022/A

Amd. No. - N° de la modif.
002

Buyer ID - Id de l'acheteur
pwu201

Client Ref. No. - N° de réf. du client
DFO-EW038-202022

File No. - N° du dossier
PWU-9-42185

CCC No./N° CCC - FMS No./N° VME

This amendment is raised to modify solicitation EW038-202022/A as follows:

On page 1 of 122, under section Solicitation Closes:

DELETE:

2020-01-22

INSERT:

2020-01-24

QUESTION:

- 1) Section 1.8.1 states that there is existing geotechnical information available – can this be provided to assist in preparation of our proposal?

ANSWER:

Attached is all of the geotechnical information that DFO currently has for the site.

QUESTION:

- 2) In order to provide an accurate and specific proposal, we will consider the potential sheet pile wall repair / replacement options that may be applicable. Is there any further information or drawings available on the current condition of the wall?

ANSWER:

There are no additional drawings available depicting the sheet pile wall in its current condition. Attached is a picture taken of the sheet pile wall in June 2019.

Solicitation No. - N° de l'invitation
EW038-202022/A

Amd. No. - N° de la modif.
002

Buyer ID - Id de l'acheteur
pwu201

Client Ref. No. - N° de réf. du client
DFO-EW038-202022

File No. - N° du dossier
PWU-9-42185

CCC No./N° CCC - FMS No./N° VME

QUESTION:

- 3) We note that construction is scheduled to take place over winter – are there particular schedule constraints that mean this is required?

ANSWER:

DFO have instructed that if the winter construction period will affect the overall quality of work performed (ie. Compaction of soils in sub-zero temperatures) they are open to pushing the construction period back to allow for the weather to be more amenable.

QUESTION:

- 4) We note that the RFP stipulates hard copy submission. Can you please confirm whether electronic submission would also be acceptable.

ANSWER:

please review section SRE 2 Proposal Requirements, it contains submission requirements.



182 McDougal Road
Fort Smith, NT X0E 0P0
Telephone 867.872-2812
Facsimile 867.872-2813
mitch.heron@maskwaengineering.ca

March 13, 2016

Felipe Salgado
Project Manager
Public Works and Government Services / Government of Canada

RE: Geotechnical Investigation at Hay River Coast Guard Base

Dear Felipe Salgado,

Maskwa Engineering Ltd. (Maskwa) as part of their contract with Public Works and Government Services Canada (PW&GSC) conducted a drilling program at the Hay River Coast Guard Site. As requested, this field report documents the methodology and the relevant information of this site investigation.

PROJECT INFORMATION

PW&GSC awarded a contract to design a new water and sewer system for the Hay River Coast Guard Base. The existing water and sewer system was installed in 1962 when the base was opened. The existing water mains are approximately 3.5m below the existing ground.

METHODOLOGY

The site investigation was conducted on March 2, 2016 by Maskwa's field representative, Mitchel Heron

A track mounted geotechnical drill rig, CME850, operated by ProCore Drilling Ltd. of Hay River, NT, was used to drill two boreholes at the project site. Borehole locations were selected in the field by Maskwa's representative, considering the general features of the project site. The relative location of these two boreholes drilled can be identified in the attached photo appendix. To reduce damages on the existing road pavement, boreholes were located outside of the paved area. BH-01 was located near the entrance to site by the coast guard sign. The second was located close to the second valve chamber approximately 5m from the road shoulder. Photographs taken during the site investigation are presented in Appendix A.

Borehole 1 was advanced to a depth of 6.0 m below the existing road surface and Borehole 2 was advanced to refusal at 6.0m. SPTs were undertaken at regular intervals (1.5 m, if possible based on the ground conditions) to obtain soil consistency information and disturbed samples. Additional disturbed soil samples were obtained from auger flights. Both types of samples were retained for visual soil description and laboratory testing. Both boreholes were logged, based on observations of soil samples and drilling behaviors. Ground ice condition or temperature was checked from the disturbed soil samples, and recorded in the borehole logs.

Standpipes were installed during this drilling investigation at both holes in order to determine ground water levels later in the season. Groundwater level was also observed about 1 hour after drilling to insure a stabilized water level was identified.



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Borehole logs that indicate the field observations and laboratory testing results are presented in Appendix B.

CLIMATE

Environment Canada maintains a weather station in Hay River with complete records available from 1943 to the present. (Environment Canada, 2012)

The mean annual air temperatures recorded varied between -5.2°C (1966) and -0.5°C (2010). Linear interpolation was used to analyze temperature trends, indicating a warming trend of about 0.053 °C per year, over the period of record. The average of mean freezing index over the past ten years was approximately 2900 Celsius degree-day, with a warming trend of 9 Celsius degree-day per year.

OBSERVATIONS AND RECOMENDATIONS

The existing soil is mostly silty clay with some traces of organic material. The ground water table is approximately 4.6-5.0m below the existing ground. Wells were installed in order to determine the water level during the spring, summer and fall.

The existing pipe depth is adequate for frost protection. Generally the frost penetrates approximately 1.0-2.0m depending on mean temperature, the location and snow cover. It is recommended that the pipe is bedded with a clean sand or gravel free of frost susceptible material. The depth should be a minimum of 300mm on each side of the pipe. The existing trench material can be used for backfill as long as it is free of organic material. The top 450mm when under the road should be a crushed aggregate and compacted in lifts no greater than 150mm.

LABORATORY TESTING

Laboratory testing included determination of natural moisture contents, Atterberg Limits test, grain size analyses by hydrometer, and soluble sulphate content. The test results are presented with the borehole logs in Appendix C.



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CLOSURE

This investigation was carried out in accordance with generally accepted practice of Geotechnical Engineering.

We trust that the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

MASKWA ENGINEERING LTD.
NAPEGG PERMIT TO PRACTICE: P 347

Prepared By:

Mitchel Heron, CET

PROJECT: Geotechnical Investigation		CLIENT: Public Works Canada		PROJECT No.: 15-070	
ADDRESS: Coast Guard Base Hay River		DRILL: Track Mounted CME850		BOREHOLE No.: BH-01	
LOCATION: Hay River, NT		STATION: 6746045mN 567578mE		DATUM NAD 83 ZONE 11	
SAMPLE TYPE <input checked="" type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT <input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE					
BACKFILL TYPE <input type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTING <input type="checkbox"/> SAND					

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE No.	SPT (N)	<div style="display: flex; justify-content: space-between;"> <div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> STANDARD PENETRATION (N) </div> <div style="text-align: center;"> 20 40 60 80 </div> </div> <div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> POCKET PEN (kPa) </div> <div style="text-align: center;"> 100 200 300 400 </div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> WATER CONTENT (%) </div> <div style="text-align: center;"> 10 20 30 40 </div> </div> <div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: black; margin-right: 5px;"></div> W </div> <div style="text-align: center;"> 10 20 30 40 </div> </div> </div>	GROUND ICE DESCRIPTION	Depth (ft)
0	TOP SOIL -fine grained, damp, loose					0	
0.5	GRAVEL -fine to medium, angular, loose to compact, damp	<input checked="" type="checkbox"/>	S1			0.5	
1.5	CLAY -sandy, silty damp medium plasticity, trace organics	<input checked="" type="checkbox"/>	S2			1.5	
3.5		<input checked="" type="checkbox"/>	S3	7		3.5	
4.5		<input checked="" type="checkbox"/>	S4			4.5	
5.5		<input checked="" type="checkbox"/>	S5			5.5	
6.0	END OF HOLE AT 6.0m, DESIRED DEPTH INSTALLED GROUND WATER MONITORING WELL					6.0	
7.0						7.0	
8.0						8.0	
9.0						9.0	
10.0						10.0	
11.0						11.0	
12.0						12.0	
13.0						13.0	
14.0						14.0	
15.0						15.0	
16.0						16.0	
17.0						17.0	
18.0						18.0	

<div style="display: flex; align-items: center;"> <div> MASKWA ENGINEERING LTD 182 McDougal Road Fort Smith, NT X0E 0P0 </div> </div>	<div style="display: flex; justify-content: space-between;"> <div> LOGGED BY: MH REVIEWED BY: DRAWING No.: BH1 </div> <div> COMPLETION DEPTH: 6.0m COMPLETE: March 2, 2016 PAGE: </div> </div>
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PROJECT: Geotechnical Investigation		CLIENT: Public Works Canada		PROJECT No.: 15-070	
ADDRESS: Coast Guard Base Hay River		DRILL: Track Mounted CME850		BOREHOLE No.: BH-02	
LOCATION: Hay River, NT		STATION: 6746033mN 567640mE		DATUM NAD 83 ZONE 11	
SAMPLE TYPE <input checked="" type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT <input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE					
BACKFILL TYPE <input type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTING <input type="checkbox"/> SAND					

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE No.	SPT (N)	<div style="text-align: center;"> ■ STANDARD PENETRATION (N) ■ 20 40 60 80 ▲ POCKET PEN (kPa) ▲ 100 200 300 400 WATER CONTENT (%) Wp ——— W ——— Wi 10 20 30 40 </div>	GROUND ICE DESCRIPTION	Depth (ft)
0	TOP SOIL —fine grained, damp, loose					frozen Ground	0
0.5	SAND —fine, loose, damp, trace organics, trace clay	<input checked="" type="checkbox"/>	S1			Un-Frozen Ground	1.5
1.5		<input checked="" type="checkbox"/>	S2	9			5
2	CLAY —sandy, silty damp medium plasticity, trace organics	<input checked="" type="checkbox"/>	S3				
2.5		<input checked="" type="checkbox"/>	S4	11			10
3.5		<input checked="" type="checkbox"/>	S5				15
4.5	—water table at 4.6m —silty, very wet, soft low plasticity	<input checked="" type="checkbox"/>	S6				20
6	END OF HOLE AT 6.0m, DESIRED DEPTH INSTALLED GROUND WATER MONITORING WELL						25
7							30
8							35
9							40
10							45
11							50
12							55
13							
14							
15							
16							
17							
18							

MASKWA ENGINEERING LTD 182 McDougal Road Fort Smith, NT X0E 0P0	LOGGED BY: MH COMPLETION DEPTH: 6.0m REVIEWED BY: COMPLETE: March 2, 2016 DRAWING No.: BH1 PAGE:
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Water Content of Soil and Rock

ASTM D2216-05



SOIL MOISTURE CONTENT AND SAMPLE INFORMATION SHEET

PROJECT NUMBER	15-070	PROJECT	Water Line Replacement
DATE	5-Mar-2016	LOCATION	Coast Guard Hay River
CLIENT	Coast Guard	SAMPLED BY	Mitchel Heron

MOISTURE CONTENT

BOREHOLE #	BH1	BH1	BH1	BH1	BH2	BH2
DEPTH (m)	0-1.5m	1.5-3.0m	3.0-4.5m	4.5-6.0m	0-1.5m	1.5-3.0m
SAMPLE #	1	2	3	4	5	6
MASS OF MOIST SAMPLE + PAN (g)	1285.80	63.55	61.92	60.21	64.16	62.37
MASS OF DRY SAMPLE + PAN (g)	1162.9	55.4	53.0	50.6	52.4	53.6
MASS OF WATER (g)	122.9	8.1	8.9	9.6	11.8	8.8
MASS OF PAN (g)	396.10	20.64	20.76	20.74	20.98	20.83
MASS OF DRY SAMPLE (g)	766.8	34.8	32.3	29.9	31.4	32.8
MOISTURE CONTENT (%)	16.0	23.4	27.6	32.1	37.6	26.7

BOREHOLE #	BH2	BH2				
DEPTH (m)	3.0-4.5m	4.5-6.0m				
SAMPLE #	7	8				
MASS OF MOIST SAMPLE + PAN (g)	61.63	60.72				
MASS OF DRY SAMPLE + PAN (g)	53.3	51.0				
MASS OF WATER (g)	8.4	9.7				
MASS OF PAN (g)	20.75	20.99				
MASS OF DRY SAMPLE (g)	32.5	30.0				
MOISTURE CONTENT (%)	25.8	32.3				

BOREHOLE #						
DEPTH (m)						
SAMPLE #						
MASS OF MOIST SAMPLE + PAN (g)						
MASS OF DRY SAMPLE + PAN (g)						
MASS OF WATER (g)						
MASS OF PAN (g)						
MASS OF DRY SAMPLE (g)						
MOISTURE CONTENT (%)						

The testing services reported herein have been performed in accordance with the indexed ddated recognized standard, or in accordance with local industry practice. This report is for the sole use of the designated client. This report constitutes a testing service only and does not represent any results interpretation or opinion regarding specification compliance or material suitability. Engineering interpretation can be provided by Maskwa Engineering Ltd. upon request.

ATTERBERG LIMITS

LABORATORY REPORT

ASTM D4318



Project: Coast Guard Water & Sewer
Hay River Site
Project Number: 15-070
Sample Descrip.: clayey SILT

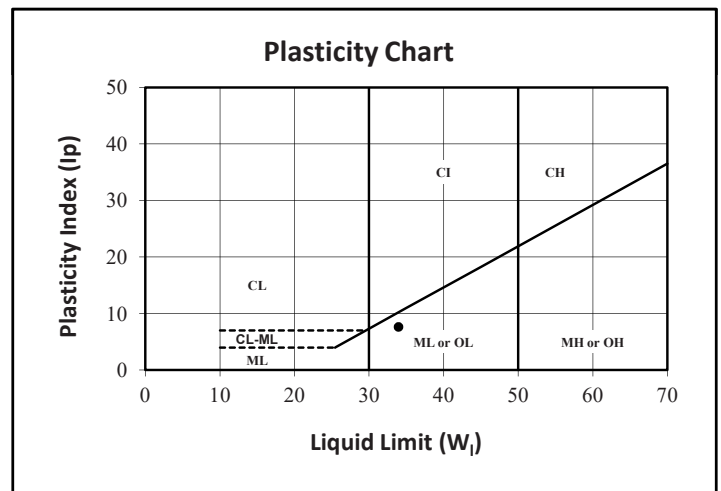
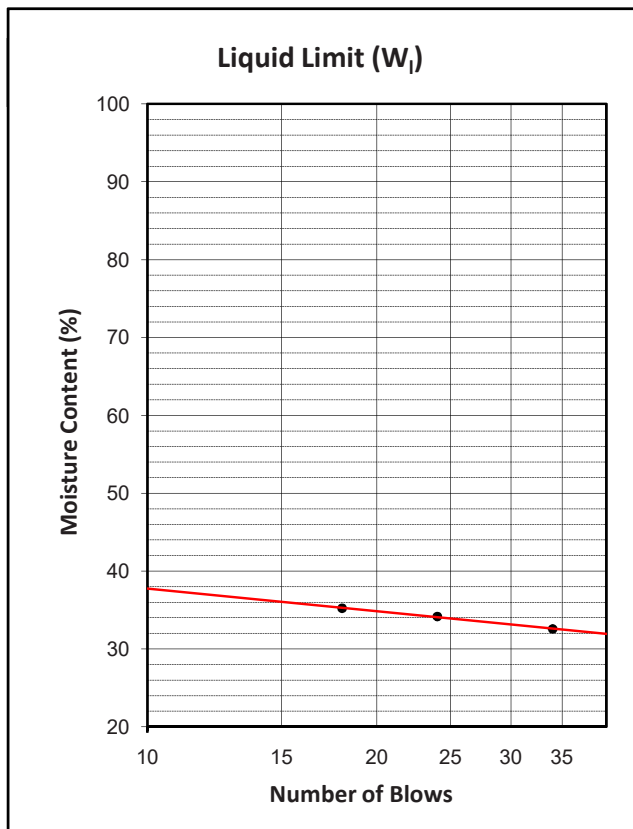
Borehole Number: BH01#4
Sample Location: Entrance to yard
Depth: 1.5-3.0
Date Sampled: 1-Mar-16 **Sampled By:** MH
Date Tested: 13-Mar-16 **Tested By:** MH

Plastic Limit Test

Trial Number	1	2	Natural Moisture
Tare Number	41	11	18
Wt. Wet Soil + Tare	22.32	27.84	28.88
Wt. Dry Soil + Tare	20.48	24.89	25.66
Wt. of Tare	13.58	13.48	13.60
Wt. of Water	1.84	2.95	3.2
Wt. of Dry Soil	6.90	11.41	12.1
Moisture Content (%)	26.7	25.9	26.7

Liquid Limit Test

Trial Number	1	2	3
No. of Blows	18	24	34
Tare Number	56	72	42
Wt. Wet Soil + Tare	30.95	31.78	30.72
Wt. Dry Soil + Tare	26.41	27.11	26.48
Wt. of Tare	13.53	13.45	13.47
Wt. of Water	4.54	4.67	4.24
Wt. of Dry Soil	12.88	13.66	13.01
Moisture Content (%)	35.2	34.2	32.6




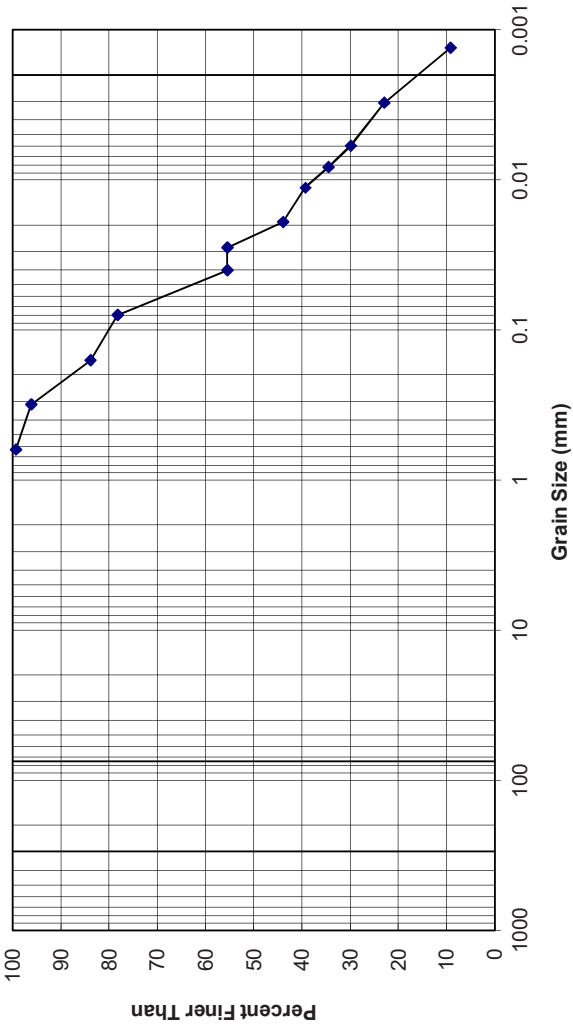
Natural Moisture (%) 26.70
Liquid Limit (%) 33.92
Plastic Limit (%) 26.26
PLASTICITY INDEX (%) 7.7

Soil Description: Medium Plasticity

USCS Symbol: CI

Remarks:

NOTE: Data presented hereon is for the sole use of the stipulated client. Maskwa is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of Maskwa. The testing services reported herein have been performed by a Maskwa technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability.

<div><div>Grain Size Analysis <i>(Mechanical & Hydrometer)</i> ASTM D422</div></div>		<div>Project : 15-070 Sample No. 04</div> <div>Title: Drilling Investigation</div> <div>Location: Hay River Coast Guard Base</div> <div>Test Pit: BH02</div> <div>Tech: M. Heron</div>																															
<div>Depth 1.5-3.0</div> <div>Source: BH02</div> <div>Description of Sample: Clayey SILT</div> <div>Date Sampled: March 2, 2015</div>		<div>Grain Size Analysis Results:</div> <table><thead><tr><th>Opening (mm)</th><th>Percent Passing (%)</th></tr></thead><tbody><tr><td>2.00</td><td>100.0</td></tr><tr><td>1.25</td><td>99.9</td></tr><tr><td>0.63</td><td>99.4</td></tr><tr><td>0.315</td><td>96.2</td></tr><tr><td>0.160</td><td>83.9</td></tr><tr><td>0.080</td><td>78.3</td></tr><tr><td>0.040</td><td>55.5</td></tr><tr><td>0.028</td><td>55.5</td></tr><tr><td>0.019</td><td>43.9</td></tr><tr><td>0.011</td><td>39.3</td></tr><tr><td>0.008</td><td>34.5</td></tr><tr><td>0.006</td><td>29.9</td></tr><tr><td>0.003</td><td>23.0</td></tr><tr><td>0.001</td><td>9.2</td></tr></tbody></table>		Opening (mm)	Percent Passing (%)	2.00	100.0	1.25	99.9	0.63	99.4	0.315	96.2	0.160	83.9	0.080	78.3	0.040	55.5	0.028	55.5	0.019	43.9	0.011	39.3	0.008	34.5	0.006	29.9	0.003	23.0	0.001	9.2
Opening (mm)	Percent Passing (%)																																
2.00	100.0																																
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0.006	29.9																																
0.003	23.0																																
0.001	9.2																																
<div>Graphical Analysis</div>  <table><thead><tr><th colspan="2">GRAVEL</th><th colspan="2">SAND</th><th colspan="2">SILT</th><th>CLAY</th></tr><tr><th>Coarse</th><th>Fine</th><th>Coarse</th><th>Medium</th><th>Fine</th><th></th><th></th></tr></thead><tbody><tr><td colspan="2">% Gravel</td><td colspan="2">% Sand</td><td colspan="2">% Silt</td><td>% Clay</td></tr><tr><td colspan="2"></td><td>25.2</td><td></td><td>60.4</td><td></td><td>14.5</td></tr></tbody></table>		GRAVEL		SAND		SILT		CLAY	Coarse	Fine	Coarse	Medium	Fine			% Gravel		% Sand		% Silt		% Clay			25.2		60.4		14.5	<div>Comments:</div> <div>Natural water content 26.8</div>			
GRAVEL		SAND		SILT		CLAY																											
Coarse	Fine	Coarse	Medium	Fine																													
% Gravel		% Sand		% Silt		% Clay																											
		25.2		60.4		14.5																											
		Reviewed by:																															

