



Correctional Services Canada (CSC)
c/o WSP Canada Inc.
65 Richmond Street, Suite 300
New Westminster, BC
V3L 5P5

February 18, 2021
File #: 18337

Attention: Gehad Ramadan

**Re: Geotechnical Report – Mission Medium Institute Water Main Works
8751 Stave Lake Street, Mission, BC**

1.0 INTRODUCTION

We understand that onsite water main replacement works have been proposed at the Mission Medium Institute located at the above referenced location. Civil drawings have been provided to us by WSP indicating the construction of new HDPE water main and fire suppression lines up to 200 mm in diameter throughout the compound to depths of up to 4 metres below current site grades. We understand that the primary installation method is expected to consist of Horizontal Directional Drilling (HDD) supplemented with entry and exit shafts throughout the compound in order to facilitate the work. Some open-cut sections are also anticipated, primarily where service connections to buildings are required.

This report presents a summary of our sub-surface investigation, expected soil conditions, general discussions, and geotechnical recommendations for the construction of the proposed water main works described above. This report has been prepared exclusively for our client, for their use, and for the use of others within their development team. Any unauthorized use of, or duplication of, this report is strictly forbidden.

2.0 SITE DESCRIPTION

The proposed civil works are proposed within the Mission Medium Institute located at the above referenced address in Mission, BC. The compound is square shaped and consists of multiple buildings, facilities, and greenscape throughout. The site is generally level and measures approximately 250 m in each direction. Pipe installation depths generally vary between 1.2 to 5.0 m below ground surface and are limited to the western half of the compound adjacent to and between the existing structures.

3.0 FIELD INVESTIGATION

The subsurface ground conditions at the site were investigated on December 11th and 14th, 2020 using a track mounted drill rig supplied by Southland Drilling of Prince George, BC. A total of 10 solid stem auger test holes were advanced to depths of up to 9 m below site grades and were sealed immediately after completion of testing and logging. The site investigation was supervised and the soils encountered were logged in the field by one of our geotechnical staff.

Drilling was completed in areas accessible to the drill and judged to be clear of services. The approximate test hole locations are shown on our Drawing No. 18337-01 following the text of this report. All depths are referenced from the existing ground surface at the location of each test hole at the time of our investigation.

4.0 SUBSURFACE CONDITIONS

4.1 Soil Conditions

The subsurface conditions at our test hole locations generally consisted of *topsoil*, *asphalt*, and/or *sand and gravel* at the surface, overlying soft to stiff *silt* with some sand, overlying dense to very dense *sandy silt (till-like)*. A detailed description of each stratum is provided below:

Surficial Topsoil/Fills

The surficial topsoil/organic sand, some gravel strata were noted to vary in thickness between 0.6 and 1.5 m. Moisture levels varied between 7.5 and 22.8% based on laboratory testing. The surficial soils at test hole TH20-06 consisted of sand and gravel fill extending to 2.0 m depth, while test hole TH20-09 consisted of asphalt, overlying sand and gravel fill extending to 1.5 m depth. Test hole TH20-05 noted a 1.5 m thick clayey silt layer underlying the surficial topsoil.

Silt

Silt was noted underlying the surficial fills noted above at all test hole locations. The silt was noted to be soft to stiff, varied between 1.5 and 4.0 m in thickness, and extended to depths of up to 6.1 m below existing grades. Moisture content levels varied between 12.8 and 29.6% based on laboratory testing.

Sandy Silt (Till)

Dense to very dense sandy silt (till-like) was noted at all test hole locations underlying the silt stratum above. This stratum was noted to contain gravel and/or cobbles and extended to the termination depth of each test hole. Moisture content levels varied between 10.3 and 26.0% based on laboratory testing.

Detailed test hole logs are attached in Appendix A following the text of this report.

4.2 Groundwater Conditions

The static groundwater table was not encountered during our investigation. However, perched water was noted to be between 2.0 and 4.0 m below ground surface at the locations of our test holes. We expect groundwater levels will fluctuate seasonally, with generally higher levels during the wetter months of the year. Due to the low infiltration of the silt layer water seepage is expected to be very slow. However, perched water accumulation is expected prior to start of excavation work.

5.0 RECOMMENDATIONS

5.1 Trenchless Methods of Construction

It is our understanding Horizontal Directional Drilling (HDD) will be the primary method of construction. The ability to undertake this work will be a function of the type of equipment and materials employed by the contractor, and their expertise in these kinds of geological conditions.

HDD generally consists of a combination of pipe jacking and the use of a remotely steerable drilling head. The drilling head removes soils and a hydraulic jacking system is employed to advance casing sections along the proposed alignment of the pipe. Typically, the drilling is supplemented with a slurry system and requires an exit shaft to retrieve the drilling equipment at its terminus location.

Based on the provided civil drawings, pipe invert elevations vary between approximately 1.5 to 5.0 m below site grades. Our investigation has indicated the presence of a dense to very dense sandy silt (till-like) layer at approximately 2.8 to 6.0 m below site grades at our test hole locations. A soft to stiff silt layer was noted to be overlying this dense till-like stratum. Therefore, we expect there may be instances where the augering alignment may coincide with this interface, which may cause the drill head to skip along the surface of the dense to very dense till-like material. In this instance, a steeper drilling angle into the sandy silt may be required to achieve the desired alignment. In addition, the presence of larger gravels and/or cobbles are likely within the lower silty sand material which may make drilling conditions difficult.

Based on the proposed pipe diameter (max. 200 mm), we do not anticipate any negative impacts to adjacent structures due to the HDD works. However, footing elevations should be provided to GeoPacific for confirmation.

5.2 Entrance/Exit Shafts & Open-Cut Sections

In order to facilitate the HDD work, we expect drilling and receiving shafts will be required. In accordance with WorkSafe BC regulations, any excavations in excess of 1.2 m must be shored or excavated under the advice and supervision of a professional geotechnical engineer. Based on provided civil information, pipe invert depths of up to ± 5.0 m are anticipated. We would expect entrance and exit shafts will be slightly deeper than pipe invert elevations to allow sufficient working room around the HDD equipment and to allow drilling operations to occur.

We expect conventional, pre-fabricated shoring cages may be used for the majority of the work for shoring purposes. For shafts greater than 2.5 m in depth, we recommend slide rail shoring cages be used to provide continuous shoring during excavation of the shaft. The presence of adjacent structures, utilities, vaults, and/or other infrastructure should also be taken into consideration prior to construction. GeoPacific should be contacted to review such excavations prior to commencing the work.

5.3 Dewatering

As mentioned above in Section 4.2 above, perched water is expected to develop overlying more silty, less permeable soils. We expect seepage into entry and exist shafts to be moderate and can be controlled using conventional sumps and sump pumps.

5.4 Pipe Settlement

We expect the pipes will be constructed within soft to stiff silt or dense to very dense sand and gravel observed during our investigation. Some settlement due to long-term consolidation or compression of these

strata is expected. However, differential settlements are considered to be negligible. We expect minimal settlement of the ground-surface due to the HDD installation method provided the work is completed in accordance with our recommendations.

5.5 Seismic Assessment

Our review of the soil conditions indicates that the area consists of road structure fills, overlying dense to very dense sand and gravels with interbedded silt or sand strata. These soils are not considered prone to ground liquefaction or other forms of ground softening caused by earthquake induced motions. Therefore, we see no geotechnical need for any special seismic ground improvement elements in the design.

5.6 Backfill Materials and Compaction

We recommend that *engineered fill* be used to complete any backfilling work, such as reinstatement of the entry/exit shafts upon completion of HDD operations and open-cut trench sections. In the context of this report, engineered fill is defined as a clean *sand to sand and gravel* with no more than 5% material passing the 75 µm sieve, compacted in 300 mm loose lifts to a minimum of 95% Modified Proctor Dry Density (ASTM D1557). Granular material placed over native silt to sandy silt soils are required to be separated using geotextile filter fabric.

5.7 Instrumentation and Monitoring

Monitoring for possible settlement and/or other movements during excavation and HDD operations is recommended to assess the effectiveness of the contractor's methods in completing the work. We recommend survey points be established on adjacent buildings and other infrastructure that may be sensitive to movements. We also recommend vibration monitoring be conducted to monitor vibration levels during HDD works adjacent to existing structures.

5.8 Corrosion Assessment

Soil corrosion potential is derived from the intrinsic properties of the soils that are in contact with buried utilities. In order to determine these properties, soil samples must be collected from the proposed pipe depth. As the exact pipe depths vary throughout the site, samples were chosen at depths of 1.2 to 3.0 m below existing grades.

Our soil corrosion assessment was completed in general accordance with AWWA/ANSI C105/A21.5-05 Standard – Appendix A for Western Canada. This system involves a series of tests, including saturated resistivity, pH, oxidation-reduction potential, sulfide content, moisture content and soil characterization (sieve analysis), whose results are assigned a point value based on their experimentally observed contribution to corrosion potential, as described in the standard (Table A.1). The points are summed to produce an overall corrosion potential for the soil sample. AWWA/ANSI C105/A21.5-05 – Appendix A recommends that protections be employed to ductile-iron pipe and/or fittings when the total corrosion potential is +10 or greater. The results of our corrosion potential analysis are summarized below.

Table 1 - Soil Corrosion Potential

Test Hole	Depth (m)	Corrosivity Index	Corrosion Potential
TH21-01	2.7	3.0	Low
TH21-04	3.0	4.0	Low
TH21-06	3.0	6.0	Moderate
TH21-08	1.2	2.0	Low
TH21-09	2.4	4.0	Low

Based on the results of our testing, all samples tested indicated corrosivity indices of less than 10 at our sampling locations.

6.0 CLOSURE

This report has been prepared exclusively for our client for the purpose of providing geotechnical recommendations for the design and construction of the proposed water main and fire suppression works, as described herein. We expect that subcontractors undertaking this work will be given a copy of this report for their review prior to commencing the works. The report remains the property of GeoPacific Consultants Ltd. and unauthorized use of, or duplication of, this report is prohibited.

We are pleased to be of assistance to you with this project and trust the foregoing is sufficient for your purposes at this time. If you have any questions or require clarification of the above, please do not hesitate to contact the undersigned.

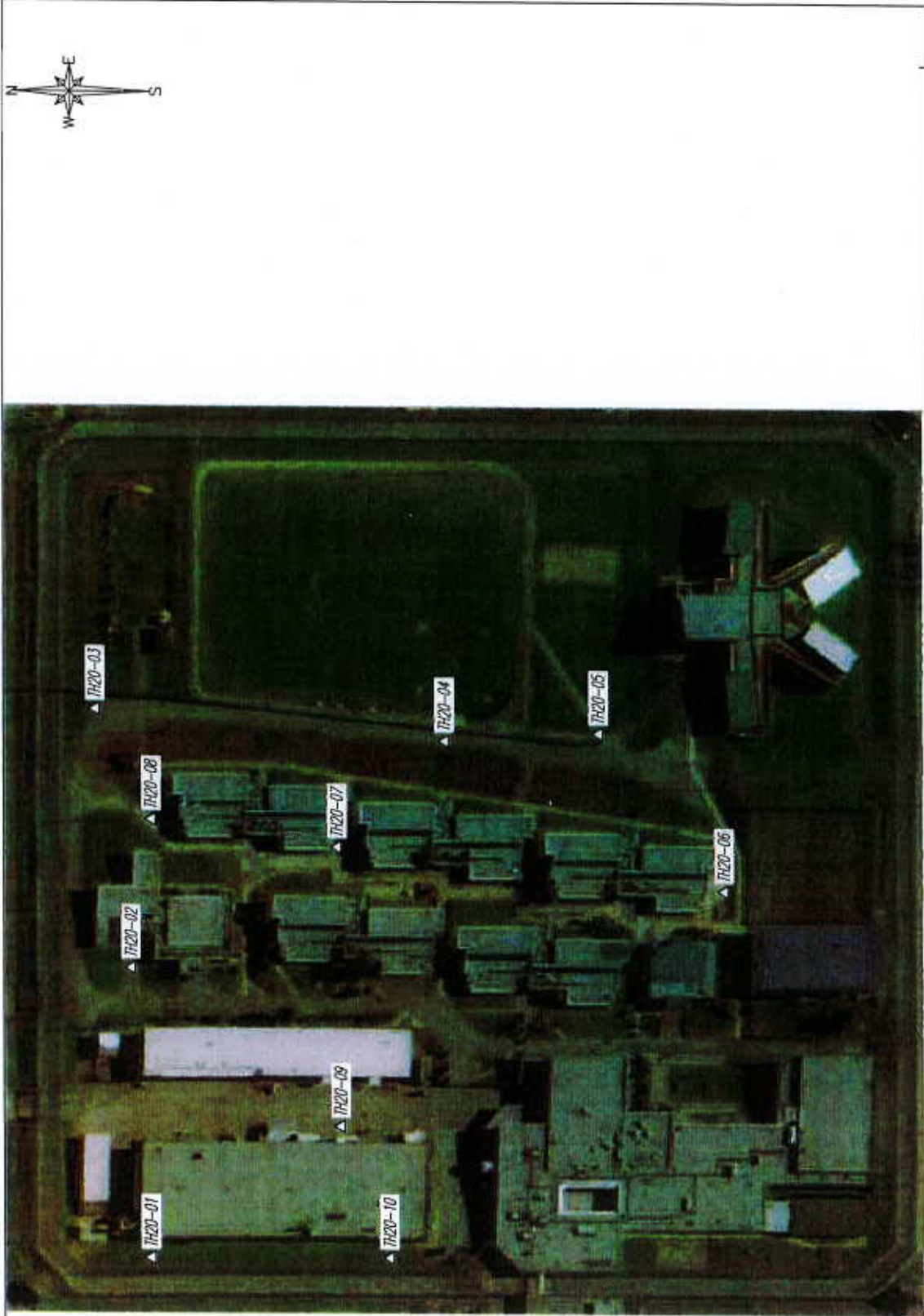
For:
GeoPacific Consultants Ltd.

Reviewed By:



Jakub Szary, B.Sc., ASCT
Lab Manager

Farshid Bateni, Ph.D., P.Eng.
Project Engineer



LEGEND:

△ TH# - TEST HOLE (TH) LOCATION

SITE PLAN

*TEST LOCATIONS ARE APPROXIMATE

REFERENCE:

FILE NO: 18337
 DWG. NO: 18337-01
 REVISIONS:
 A.
 B.
 C.

INTERNAL WATER MAIN UPGRADES
 8751 Stave Lake Street, Mission, BC
 TEST HOLE SITE PLAN

DATE:	17-DEC-2020
DRAWN BY:	LJK
APPROVED BY:	MAK
REVIEWED BY:	LJK
SCALE:	NTS

1379 West 75th Ave.
 Vancouver, B.C. V6P 6P2
 TEL: 604.430.0022
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APPENDIX A – TEST HOLE LOGS

Test Hole Log: TH20-01

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



GEOPACIFIC
CONSULTANTS

1779 West 75th Avenue, Vancouver, BC, V6P 6P2
Tel: 604-439-0922 Fax: 604-439-9189

INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot)	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface					
0.0		TOPSOIL - SAND with GRAVEL Loose, grey, fine-medium to coarse, dry to slightly moist	0.0		6		
1.2		SILT Soft to firm, brown, moist to wet	1.2	7.5	5		
3.2		@ 3.2m - Becoming wet.		12.8	3		
4.3		SANDY SILT (TILL) Dense to very dense, dark grey, some gravel and cobbles, slightly moist to moist	4.3	13.2	2		
7.6		End of Borehole	7.6	11.4	1		
7.6					10		
7.6					16		
7.6					13		
7.6					13		
7.6					9		
7.6					19		
7.6					>50		
7.6					>50		

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.01
Page: 1 of 1

Test Hole Log: TH20-02

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
0.6		TOPSOIL Dark brown, some roots, trace organic, moist	0.6	22.8	3		
4.3		SILT Firm to stiff, grey to brown, some sand and cobbles, moist @3.0m - Becoming wet.	4.3	16.5	7, 7, 19, 23, 14, 10, 33, 38		
4.3		SANDY SILT (TILL) Dense to very dense, dark grey, some gravel, dry to slightly moist	4.3	15.8	9, 23, 9		
7.6		End of Borehole	7.6	11.4	>50, >50		

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.02
Page: 1 of 1

Test Hole Log: TH20-03

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
0.6		TOPSOIL Dark brown, some roots, moist	0.6				
3.7		SILT Firm, brown, some sand, moist to wet @3.3m - Becoming wet.	3.7	29.2			
9.1		SANDY SILT (TILL) Dense to very dense, dark grey, some gravel, dry to slightly moist	9.1	10.3			
9.1		End of Borehole	9.1	26.0			

Logged: LK

Method: Solid stem auger

Date: 2020-Dec-11, 14

Datum: Ground elevation

Figure Number: A.03

Page: 1 of 1

Test Hole Log: TH20-04

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
1		TOPSOIL Dark brown, some roots and gravel, moist	0.6				
2		SILT Soft, brown to dark brown, some organic, trace cobbles on the top, moist to wet		29.6			
3							
4		@4.0m - Becoming wet.		17.3			
5		SANDY SILT (TILL) Dense to very dense, dark grey, with gravel, moist	4.6				
6		@Less gravel with depth					
7				13.5			
8		End of Borehole	7.6				

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.04
Page: 1 of 1

Test Hole Log: TH20-05

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface					
0 to 1.5		TOPSOIL Dark brown, some cobbles and boulders, moist	0.0				
1.5 to 3.0		CLAYEY SILT Brown, trace gravel, some organics, moist	1.5	43.0			
3.0 to 6.1		SILT Firm, brown, moist to wet @4.4m - Becoming wet. @Boulders 15 feet	3.0				
6.1 to 9.1		SANDY SILT (TILL) Dense to very dense, dark grey, with gravel, moist	6.1	18.1			
9.1 to 9.1		End of Borehole	9.1	16.2			

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number:
Page: 1 of 1 **A.05**

Test Hole Log: TH20-06

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot)	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
0 to 2.1		SAND and GRAVEL(FILL) Brown, slightly moist	0.0	26.9	10, 21, 36, 40, 49		
2.1 to 4.0		SILT Soft, brown, moist to wet @3.5m - Becoming wet.	2.1		7, 6, 7, 5		
4.0 to 7.6		SANDY SILT(TILL) Dense to very dense, dark grey, with gravel, moist	4.0	14.2	14, 17, 23, 38, 47, 45, >50, >50		
7.6		End of Borehole	7.6				

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.06
Page: 1 of 1

Test Hole Log: TH20-07

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
0 to 0.9		TOPSOIL Brown, slightly moist	0.0				
0.9 to 2.7		SILT Soft to firm, brown, some sandy lenses, moist to wet @2.7m - Becoming wet.	0.9	14.3			
2.7 to 9.1		SANDY SILT(TILL) Dense to very dense, dark grey, with gravel, moist	2.7				
9.1 to 30.0		End of Borehole	9.1	12.9			

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.07
Page: 1 of 1

Test Hole Log: TH20-08

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot)	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
0 - 1		TOPSOIL Brown, some roots, moist	0.0		8, 14		
1 - 2.4		SILT Soft to firm, brown, some sandy lenses, moist to wet @2.0m - Becoming wet.	2.4	27.9	8, 15, 17, 19, 23		
2.4 - 7.6		SANDY SILT (TILL) Dense to very dense, dark grey, with gravel, moist	7.6	15.7	17, 34, >50, >50		
7.6 - 7.6		End of Borehole	7.6	10.3			

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.08
Page: 1 of 1

Test Hole Log: TH20-09

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
0 - 1.5		ASPHALT SAND and GRAVEL(FILL) Brown, slightly moist	0.0	14.1	25, >50, 41, 45		
1.5 - 3.0		SILT Firm, brown to grey, some sandy layers, some cobbles and boulders, moist to wet @2.5m - Becoming wet.	1.5	20.7	22, 19, 21, 36		
3.0 - 7.6		SANDY SILT with GRAVEL(TILL) Dense to very dense, dark grey, some gravel, moist	3.0	10.7	12, 44, >50, >50		
7.6		End of Borehole	7.6				

Logged: LK
Method: Solid stem auger
Date: 2020-Dec-11, 14

Datum: Ground elevation
Figure Number: A.09
Page: 1 of 1

Test Hole Log: TH20-10

File: 18337

Project: Mission Institute Water Main Upgrades

Client: WSP Group

Site Location: 8751 Stave Lake Street, Mission, BC



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INFERRED PROFILE				Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
Depth	Symbol	SOIL DESCRIPTION	Depth (m)/Elev (m)				
0		Ground Surface	0.0				
1		TOPSOIL - SAND with GRAVEL Loose to compact, brown to grey, fine-medium to coarse, some cobbles, moist	0.0	9.8	12		
2		SILT Firm to stiff, dark brown, some gravel and boulders, moist to wet @2.8m - Becoming wet.	1.5		17		
3			1.5		16		
4		SANDY SILT with GRAVEL(TILL) Dense to very dense, dark grey, slightly moist	4.9	19.1	21		
5			4.9		23		
6		End of Borehole	7.6	19.0	23		
7			7.6		25		
8					13		
9					35		
10					>50		
11					>50		
12							

Logged: LK

Method: Solid stem auger

Date: 2020-Dec-11, 14

Datum: Ground elevation

Figure Number: A.10

Page: 1 of 1

APPENDIX B – CORROSION POTENTIAL ANALYSIS TEST RESULTS



CLIENT:	CORRECTIONAL SERVICES CANADA (CSC)	PROJECT #:	18337
PROJECT NAME:	MISSION MEDIUM INSTITUTION WATER MAIN WORKS		
PROJECT LOCATION:	8751 STAVE LAKE STREET, MISSION		
SAMPLED BY:	LK/JS	DATE SAMPLED:	17-Dec-20
TESTED BY:	CM	DATE TESTED:	6-Jan-21

HOLE / SAMPLE ID:	TH20-01			
DEPTH / LOCATION:	9'			
	TEST METHOD	TEST RESULT	CRITERIA	INDEX
SATURATED RESISTIVITY [Ω·cm]:	ASTM G57	140000	≥3000	0.0
OXIDATION REDUCTION POTENTIAL (mV)	ASTM G200	114.7	> 100 mV	0.0
pH	ASTM G51	6.95	6.5 - 7.5	0.0
SULFIDE CONTENT		TRACE	TRACE	2.0
MOISTURE CONTENT	ASTM D2216	12.8%	FAIR DRAINAGE, GENERALLY MOIST	1
SOIL DESCRIPTION	ASTM C136 & C117	SAND AND GRAVEL, TRACE SILT		

TOTAL (SATURATED)	ANSI C105 APPENDIX A	3.0	CORROSION POTENTIAL (SATURATED)	LOW
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Comments: THE OVERALL CORROSION POTENTIAL OF THE SAMPLE IS LOW

Per: Cindy Marinovic, B.Sc.

Lab Technician

Reviewed by: Jakub Szary, B.Sc., ASCT

Lab Manager



CLIENT:	CORRECTIONAL SERVICES CANADA (CSC)	PROJECT #:	18337
PROJECT NAME:	MISSION MEDIUM INSTITUTION WATER MAIN WORKS		
PROJECT LOCATION:	8751 STAVE LAKE STREET, MISSION		
SAMPLED BY:	LK/JS	DATE SAMPLED:	17-Dec-20
TESTED BY:	CM	DATE TESTED:	6-Jan-21

HOLE / SAMPLE ID:	TH20-06			
DEPTH / LOCATION:	10'			
	TEST METHOD	TEST RESULT	CRITERIA	INDEX
SATURATED RESISTIVITY [Ω -cm]:	ASTM G57	12000	≥ 3000	0.0
OXIDATION REDUCTION POTENTIAL (mV)	ASTM G200	101.6	> 100 mV	0.0
pH	ASTM G51	6.2	4 - 6.5	0.0
SULFIDE CONTENT		TRACE	TRACE	2.0
MOISTURE CONTENT	ASTM D2216	26.9%	POOR DRAINAGE, CONTINUOUSLY WET	2
SOIL DESCRIPTION	ASTM C136 & C117	SILT, SOME SAND, TRACE GRAVEL		

TOTAL (SATURATED)	ANSI C105 APPENDIX A	4.0	CORROSION POTENTIAL (SATURATED)	LOW
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Comments: THE OVERALL CORROSION POTENTIAL OF THE SAMPLE IS LOW

Per: Cindy Marinovic, B.Sc.

Lab Technician

Reviewed by: Jakub Szary, B.Sc., ASCT

Lab Manager



CLIENT:	CORRECTIONAL SERVICES CANADA (CSC)	PROJECT #:	18337
PROJECT NAME:	MISSION MEDIUM INSTITUTION WATER MAIN WORKS		
PROJECT LOCATION:	8751 STAVE LAKE STREET, MISSION		
SAMPLED BY:	LK/JS	DATE SAMPLED:	17-Dec-20
TESTED BY:	CM	DATE TESTED:	6-Jan-21

HOLE / SAMPLE ID:	TH20-04			
DEPTH / LOCATION:	10'			
	TEST METHOD	TEST RESULT	CRITERIA	INDEX
SATURATED RESISTIVITY [Ω-cm]:	ASTM G57	11000	≥3000	0.0
OXIDATION REDUCTION POTENTIAL (mV)	ASTM G200	39.2	0 - 50 mV	4.0
pH	ASTM G51	5.31	4 - 6.5	0.0
SULFIDE CONTENT		NEGATIVE	NEGATIVE	0.0
MOISTURE CONTENT	ASTM D2216	29.6%	POOR DRAINAGE, CONTINUOUSLY WET	2
SOIL DESCRIPTION	ASTM C136 & C117	SILT, SOME SAND, TRACE GRAVEL		

TOTAL (SATURATED)	ANSI C105 APPENDIX A	6.0	CORROSION POTENTIAL (SATURATED)	MODERATE
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Comments: THE OVERALL CORROSION POTENTIAL OF THE SAMPLE IS MODERATE

Per: Cindy Marinovic, B.Sc.

Lab Technician

Reviewed by: Jakub Szary, B.Sc., ASCT

Lab Manager



CLIENT:	CORRECTIONAL SERVICES CANADA (CSC)	PROJECT #:	18337
PROJECT NAME:	MISSION MEDIUM INSTITUTION WATER MAIN WORKS		
PROJECT LOCATION:	8751 STAVE LAKE STREET, MISSION		
SAMPLED BY:	LK/JS	DATE SAMPLED:	17-Dec-20
TESTED BY:	CM	DATE TESTED:	6-Jan-21

HOLE / SAMPLE ID:	TH20-09			
DEPTH / LOCATION:	8'			
	TEST METHOD	TEST RESULT	CRITERIA	INDEX
SATURATED RESISTIVITY [Ω-cm]:	ASTM G57	11000	≥3000	0.0
OXIDATION REDUCTION POTENTIAL (mV)	ASTM G200	109.5	> 100 mV	0.0
pH	ASTM G51	6.98	6.5 - 7.5	0.0
SULFIDE CONTENT		NEGATIVE	NEGATIVE	0.0
MOISTURE CONTENT	ASTM D2216	20.7%	POOR DRAINAGE, CONTINUOUSLY WET	2
SOIL DESCRIPTION	ASTM C136 & C117	SILT, SOME SAND, TRACE GRAVEL		

TOTAL (SATURATED)	ANSI C105 APPENDIX A	2.0	CORROSION POTENTIAL (SATURATED)	LOW
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Comments: THE OVERALL CORROSION POTENTIAL OF THE SAMPLE IS LOW

Per: Cindy Marinovic, B.Sc.

Lab Technician

Reviewed by: Jakub Szary, B.Sc., ASCT

Lab Manager



GEOPACIFIC
CONSULTANTS

CORROSION POTENTIAL REPORT
(AWWA C105/A21.5-10 - APPENDIX A)

Vancouver Lab
1779 West 75th Avenue
Vancouver, B.C V6P 6P2

CLIENT:	CORRECTIONAL SERVICES CANADA (CSC)	PROJECT #:	18337
PROJECT NAME:	MISSION MEDIUM INSTITUTION WATER MAIN WORKS		
PROJECT LOCATION:	8751 STAVE LAKE STREET, MISSION		
SAMPLED BY:	LK/JS	DATE SAMPLED:	17-Dec-20
TESTED BY:	CM	DATE TESTED:	6-Jan-21

HOLE / SAMPLE ID:	TH20-08			
DEPTH / LOCATION:	4'			
	TEST METHOD	TEST RESULT	CRITERIA	INDEX
SATURATED RESISTIVITY [Ω-cm]:	ASTM G57	9200	≥3000	0.0
OXIDATION REDUCTION POTENTIAL (mV)	ASTM G200	132.8	> 100 mV	0.0
pH	ASTM G51	6.33	4 - 6.5	0.0
SULFIDE CONTENT		TRACE	TRACE	2.0
MOISTURE CONTENT	ASTM D2216	27.9%	POOR DRAINAGE, CONTINUOUSLY WET	2
SOIL DESCRIPTION	ASTM C136 & C117	SILT, TRACE SAND, TRACE GRAVEL		

TOTAL (SATURATED)	ANSI C105 APPENDIX A	4.0	CORROSION POTENTIAL (SATURATED)	LOW
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Comments: THE OVERALL CORROSION POTENTIAL OF THE SAMPLE IS LOW

Per: Cindy Marinović, B.Sc.

Lab Technician

Reviewed by: Jakub Szary, B.Sc., ASCT

Lab Manager