



**Ministry of Transportation and
Infrastructure**
Geotechnical and Materials Engineering

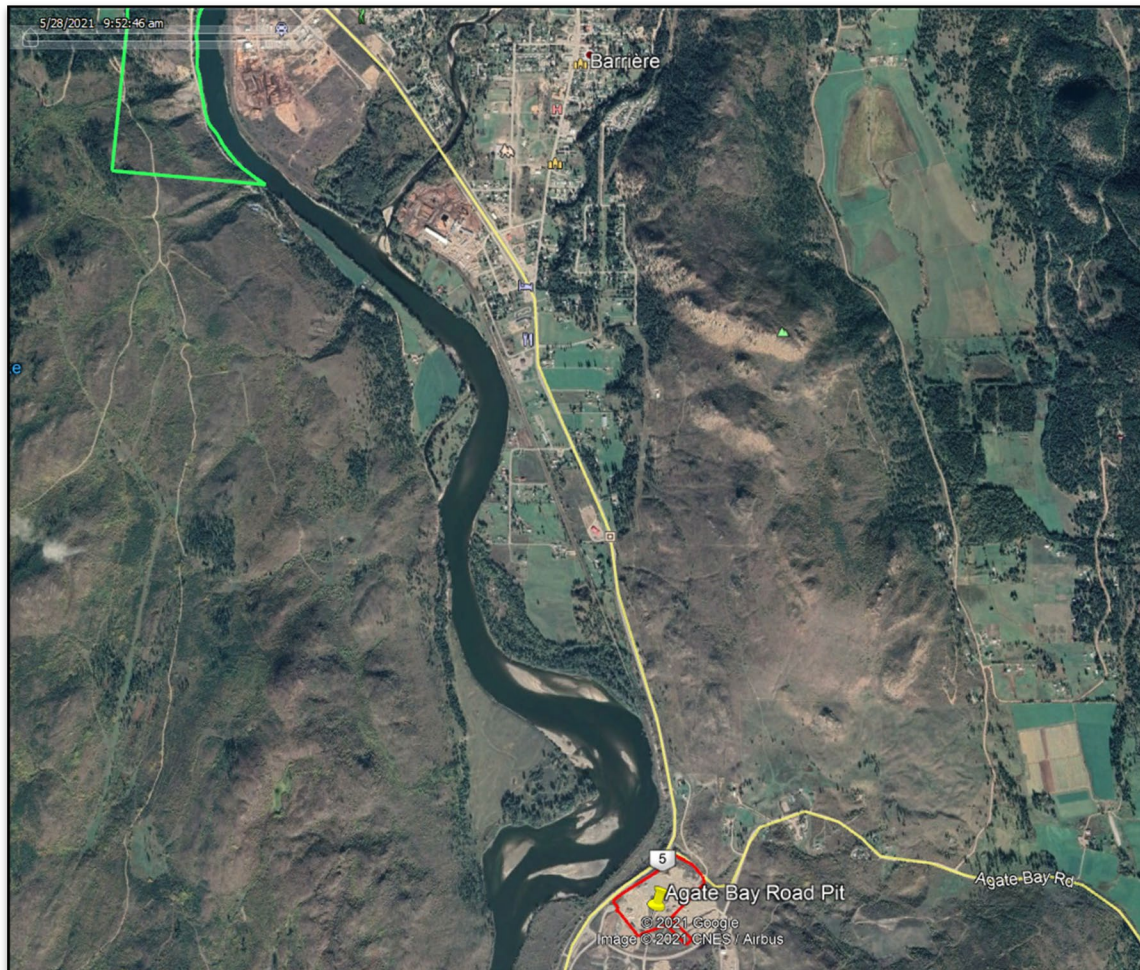
Southern Interior Region
231 - 447 Columbia Street
Kamloops, BC V2C 2T3
Telephone: (778) 362-4597
Fax: (250) 828-4083

Agate Bay Rd. Pit No. 2866

2021 Technical Information Report

Location:

The pit is located approximately 3.6 km south of Barriere, BC via Highway 5 and Hanson Road.



Legal Description:

The pit is owned by the Ministry of Transportation and Infrastructure and is legally described as Lot 8, District Lot 1319, Kamloops Division Yale District, Plan EPP13936. The geographical coordinates at the center of the pit are Universal Transverse Mercator Grid Zone 10, 701668m Easting, 5669742m Northing.

Gradation:

Testing indicates material within Agate Bay Road Pit is gradationally extremely variable throughout. Typically, material transitions from coarse clean gravel to fine sands from the northeast to south west. Based on visual estimates and laboratory sieve analysis results two suitability areas have been documented. Area A is comprised of an area on the existing pit floor as well as a portion of the original pit ground level located near the north eastern pit entrance. The area is comprised of clean, coarse granular material (refer to Test Pit Logs). The average and range of laboratory gradations as well as visual oversize rock (>75mm) estimates for Area A are as follows:

Laboratory Samples

Area A (Test Pits 18-03, 05, 06, and 07)

Classification	Average (%)	Range (%)
Gravel (4.75-75mm)	53.2	49.8 – 55.5
Sand (0.075-4.75mm)	44.7	40.8 – 49.0
Fines (<0.075mm)	2.1	1.2 – 3.7

Oversize Field Estimates

Classification	Average (%)	Range (%)
Boulders (>375mm)	0	0
Cobbles (150-375mm)	<1	0 - <1
Cobbles (75-150mm)	2.8	2 - 5

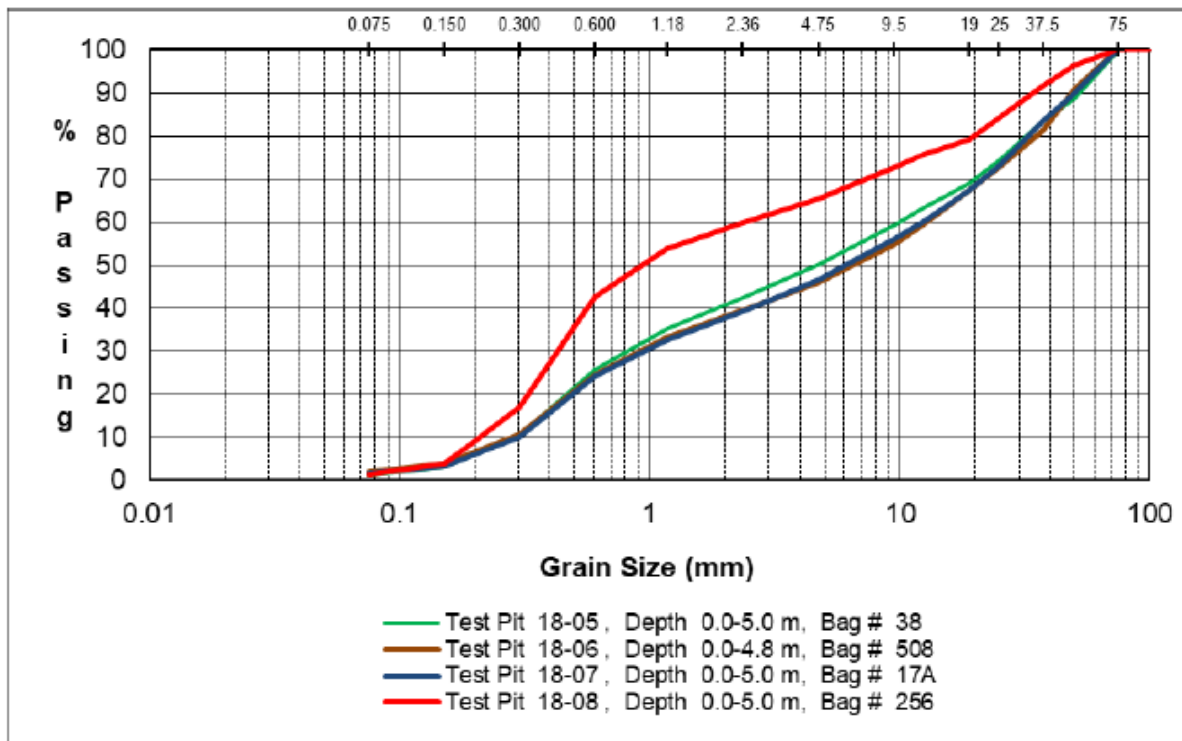
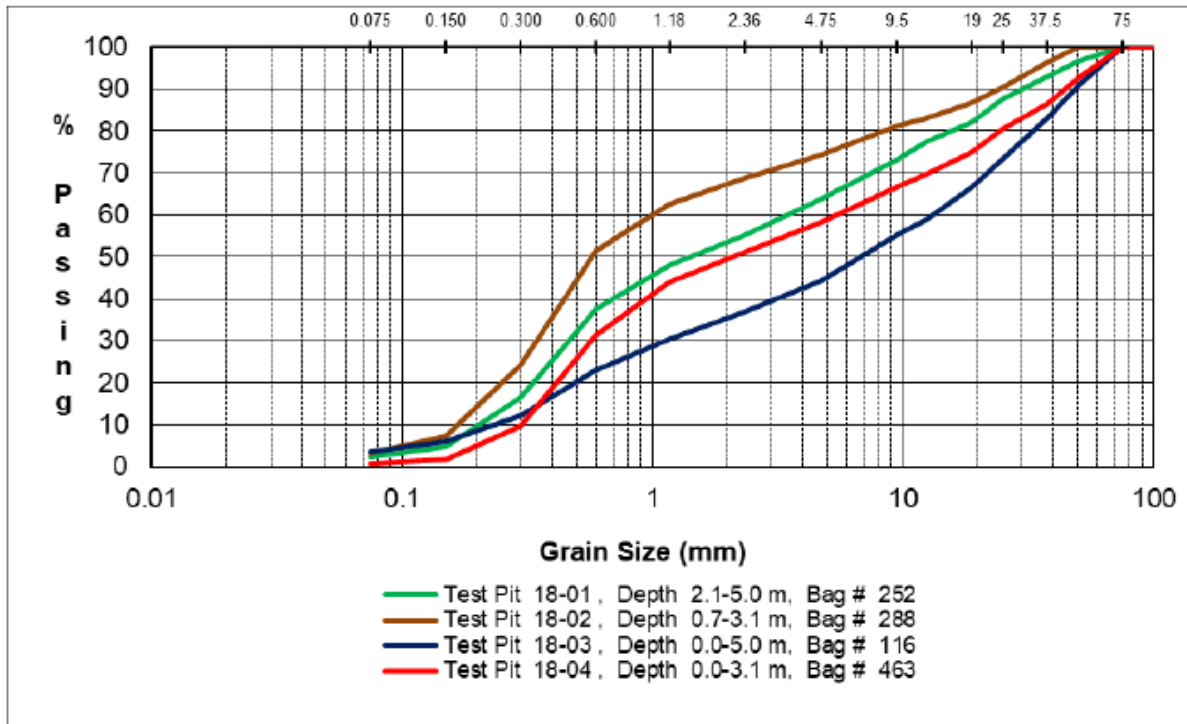
Maximum rock size observed was 200 mm.

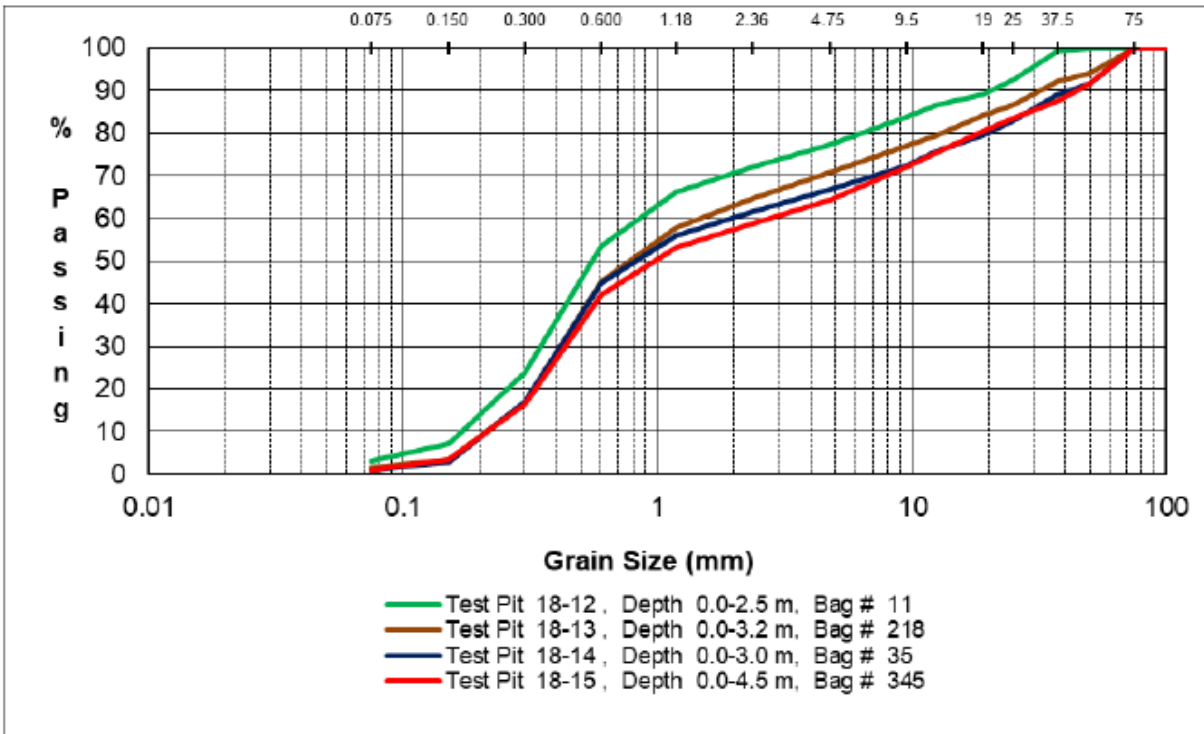
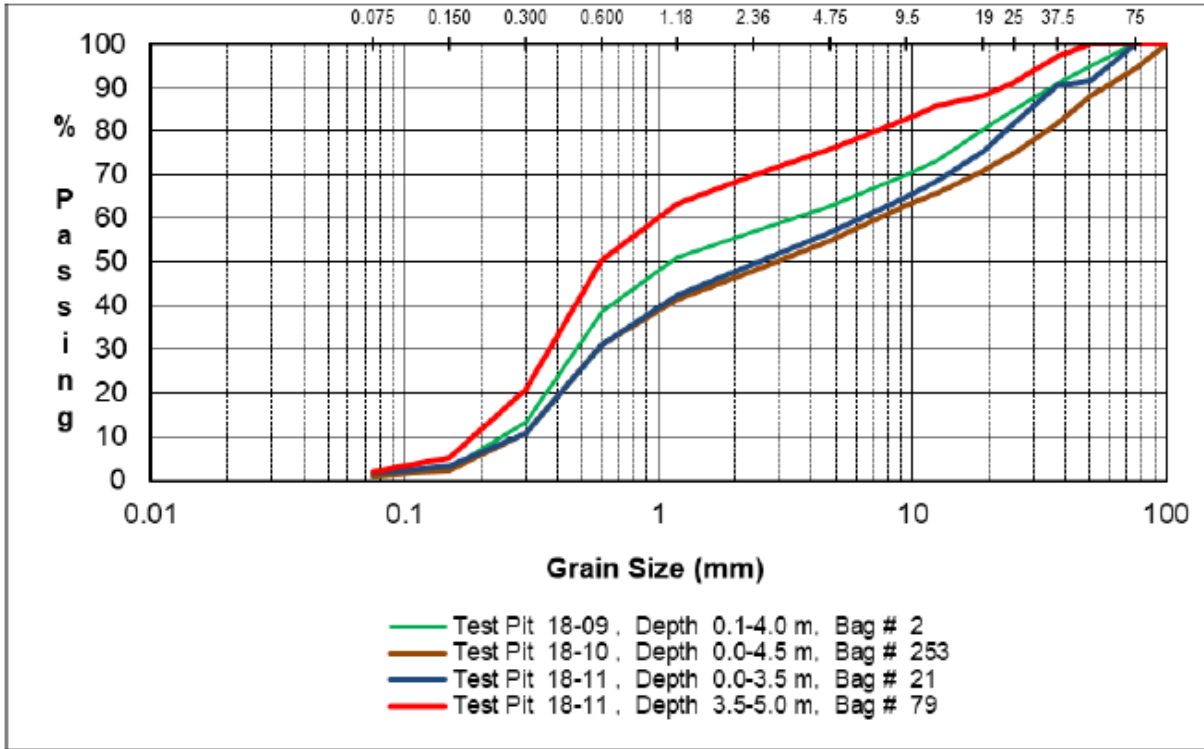
Wet Sieve Analysis Chart:

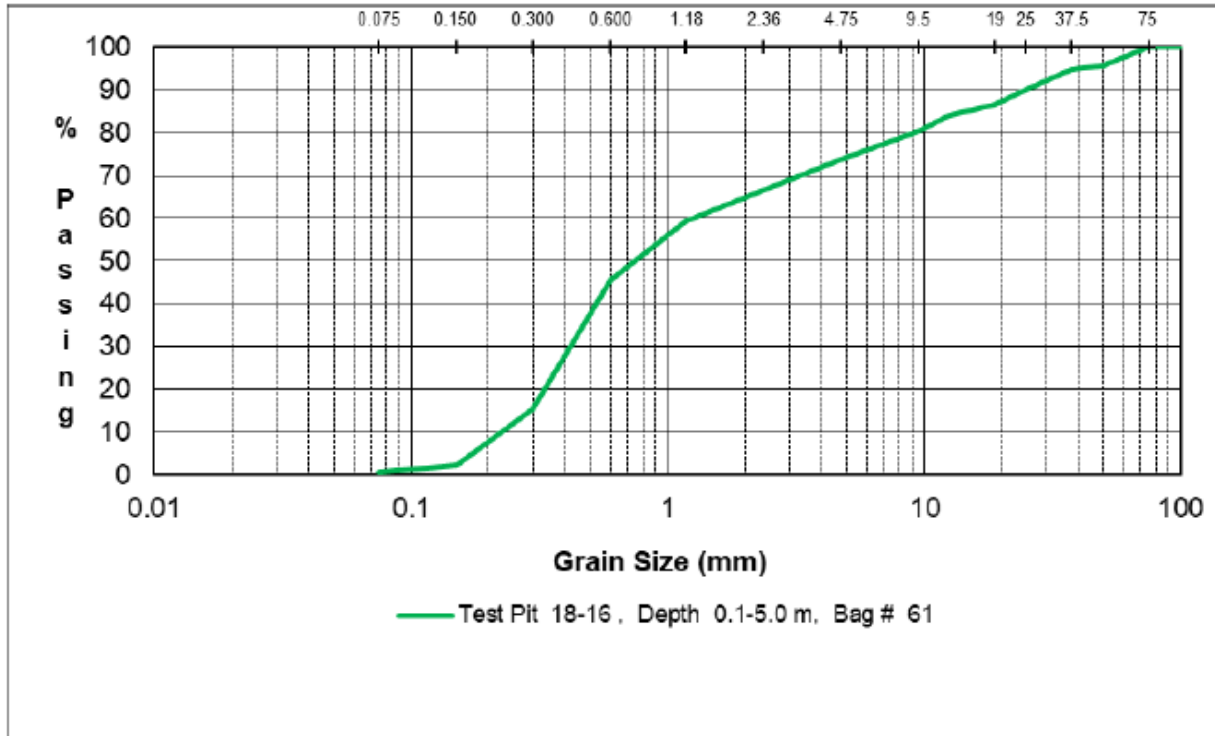
Area A:

Sample Information			Percent Passing														
Test Pit	Depth (m)	Bag #	Pit Run Sieve Sizes (mm)														
			100	75	50	37.5	25	19	12.5	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075
18-03	0.0-5.0	116	100.0	100.0	90.9	83.1	73.4	66.6	58.8	55.2	44.5	36.9	30.4	23.1	12.4	6.2	3.7
18-05	0.0-5.0	38	100.0	100.0	88.7	83.8	74.4	68.9	63.5	59.3	50.2	42.4	35.2	25.5	10.2	2.9	1.2
18-06	0.0-4.8	508	100.0	100.0	90.6	81.4	72.7	67.3	59.5	54.8	45.9	39.3	33.2	24.5	10.6	3.8	1.9
18-07	0.0-5.0	17A	100.0	100.0	89.8	83.6	72.8	67.3	60.2	55.9	46.5	39.1	32.7	24.0	10.0	3.3	1.7
	MAX		100.0	100.0	90.9	83.8	74.4	68.9	63.5	59.3	50.2	42.4	35.2	25.5	12.4	6.2	3.7
	MIN		100.0	100.0	88.7	81.4	72.7	66.6	58.8	54.8	44.5	36.9	30.4	23.1	10.0	2.9	1.2
	AVERAGE		100.0	100.0	90.0	83.0	73.3	67.5	60.5	56.3	46.8	39.4	32.9	24.3	10.8	4.1	2.1

Aggregate Gradation Chart:







Summary of Test Pit Logs (with results bolded in the chart):

PROJECT: Agate Bay Road Pit SAMPLED BY: Bryan James
 PIT #: 2866 METHOD: Excavator
 DISTRICT: Thompson Nicola DATE: October 14, 2018

TP	DEPTH		SAMPLE BAG No.	ESTIMATED MATERIAL DESCRIPTION	ESTIMATED GRADUATION			ESTIMATED ROCK 75mm				SAND TYPE	Laboratory Gradations			
	FROM	TO			G	S	F	MAX 90% 25mm	25mm-47.5mm	47.5mm-75mm	>75mm			F	M	C
18-01	0.0	2.1		GM1	50	35	15	500	1	0	<1	FM	Fill			
	2.1	5.0	252	GP	20	78	2	50	0	0	0	FM	SP (38.2%G, 81.4%S, 2.4%F)			
18-02	0.0	0.7		GP	50	48	2	150	5	0	0	M				
	0.7	3.1	288	GP	10	88	2	50	0	0	0	FM	SP (26.6%G, 71.2%S, 3.3%F)			
	3.1	4.0		GM3	10	60	30	25	0	0	0	F				
	4.0	5.0		GP	10	88	2	50	0	0	0	FM				
18-03	0.0	5.0	116	GP	55	43	2	150	2	0	0	FM	GP (56.6%G, 40.8%S, 3.7%F)			
18-04	0.0	3.1	463	GP	30	68	2	150	<1	0	0	FM	SP (41.8%G, 67.6%S, 0.7%F)			
	3.1	5.0		GM3	0	70	30	5	0	0	0	FM	Some intermixed pieces had high moisture content			
18-05	0.0	5.0	38	GP	50	48	2	200	5	<1	0	FM	GP/SP (48.8%G, 48.0%S, 1.2%F)			
18-06	0.0	4.8	508	GP	50	48	2	200	2	<1	0	FM	GP (54.1%G, 44.0%S, 1.8%F)			
18-07	0.0	5.0	17A	GP	50	48	2	200	2	<1	0	FM	GP (53.6%G, 44.8%S, 1.7%F)			
18-08	0.0	5.0	256	GP	25	73	2	75	0	0	0	FM	SP (34.6%G, 84.1%S, 1.4%F) Sand seams throughout			
18-09	0.0	0.1		RAP												
	0.1	4.0	2	GP	25	73	2	150	<1	0	0	FM	SP (37.2%G, 81.7%S, 1.1%F)			
	4.0	5.0		GP	5	93	2	50	0	0	0	FM				
18-10	0.0	4.5	253	GP	30	68	2	150	<1	0	0	FM	SP (46.0%G, 63.9%S, 1.1%F) Test Pit sluffing in			
18-11	0.0	3.5	21	GP	30	68	2	200	2	<1	0	FM	SP (43.3%G, 64.8%S, 1.8%F) Minor fill at top of Test Pit			
	3.5	5.0	79	GP	5	93	2	50	0	0	0	FM	SP (37.8%G, 68.6%S, 2.8%F)			
18-12	0.0	2.5	11	GP	10	98	2	25	0	0	0	FM	SP (22.8%G, 74.3%S, 3.1%F) fine sand seams			
	2.5	4.5		GP	2	96	2	12	0	0	0	FM				
18-13	0.0	3.2	218	GP	15	83	2	150	<1	0	0	FM	SP (28.1%G, 68.4%S, 1.6%F) Some sand seams			
	3.2	5.0		GP	2	96	2	50	0	0	0	FM				
18-14	0.0	3.0	35	GP	15	83	2	250	<1	<1	0	FM	SP (33.2%G, 66.7%S, 1.1%F)			
	3.0	4.5		GP	2	96	2	50	0	0	0	FM				
18-15	0.0	4.5	345	GP	15	83	2	75	0	0	0	FM	SP (36.7%G, 83.2%S, 1.1%F)			
18-16	0.0	0.1		Asphalt												
	0.1	5.0	61	GP	15	83	2	75	0	0	0	FM	SP (26.2%G, 73.0%S, 0.8%F)			
18-17	0.0	1.0		Fill												
	1.0	3.0		GP	45	53	2	150	<1	0	0	FM	Excavated into side of bank			
18-18	0.0	4.0		SPSM	0	90	10		0	0	0	F				

Aggregate Quality: A summary of aggregate quality tests performed on pit run samples from the 2018 tested area are as follows:

Test Pit	Micro Deval	Sand Equivalent	Bulk Relative Density	Absorption
TP 18-03	17.9% F, 10.5% C	72.0%		
TP 18-06	16.9% F, 10.2% C	72.0%		
TP 18-07			2.626 F, 2.648 C	1.02% F, 1.08% C
TP 18-11 S1	14.4% F, 9.5% C	81.0%		
TP 18-11 S2		80.0%		

Granular Volume:

Area A:

Estimated Volume: 60,000 m³

- Based on mining the granular suitability area to a depth of 5 metres near TP's 18-05, 06 and 07, 6 metres near TP 18-03 and vertically to the SRG Louis Creek Pit/MoTI Agate Bay Road Pit common east-west boundary as per the existing SRG/MoTI Resource Share Agreement. It should be noted that it may be able to mine deeper in the vicinity of TP 18-03.

Pit Development and Recommendations:

Area A:

- Area A has been previously developed, however; a small amount of stripping may be required near the existing pit gate at the northeastern end of the area. Any additional development will be the responsibility of the contractor and shall be completed as per the pit development plan or as directed by the Ministry Representative. All development must be carried out in accordance with the Health, Safety, and Reclamation Code for Mines in British Columbia, the current Standard Specifications for Highway Construction, and the Aggregate Operators Best Management Practices Handbook for BC.
- A primary crusher capable of reducing all material up to 375mm x 450mm will be required.
- The crusher is recommended to be located on the exiting pit floor near Test Pit 18-16. It will be necessary to excavate down to create a mining pit face. The exact transition from coarser gravel in Area A to finer sand to the south is not known therefore mining should commence close to Test Pit 18-07. Mining is to proceed in a north-easterly direction.
- Mining along the western boundary of the suitability area can continue to a vertical slope along the common MoTI Agate Bay Road Pit and SRG Simpcw Louis Creek Pit common boundary then sloped as per the signed MoTI/SRG Resource Share Agreement.
- Processed aggregate may be stockpiled as indicated on the Pit Development Plan (PDP) or as directed by the Ministry Representative. Site preparation may be required to create a clear and level stockpile area, particularly the relocation of several existing stockpiles (as indicated on the PDP).
- At the completion of mining, active pit faces shall be sloped to a minimum of 1 ½:1 with pit run granular material. All trees, vegetation, and overburden are to be removed within 2m of the top of the pit faces. Topsoil, overburden, and aggregate cannot be removed within 5m of the reserve boundary.

- No dumping of debris or petroleum products is permitted. The pit must be left in a clean and safe condition.
- **All reject materials resulting from aggregate production are to be placed in separate stockpiles free from deleterious material and in an easily accessible location. No stockpiling against the pit face is permitted without the permission from the Aggregate Resource Manager.**
- To maximize available mining material within the area it will be necessary to relocate the existing northern pit access road off of Hanson Road to the west (see Pit Development Plan).

Site Photographs:



Test Pit 18-01 (fill overlying sand at 2.1metres)



Test Pit 18-01 Spoil (0.0 to 2.1 metres)



Test Pit 18-01 Spoil (2.1 to 5.0 metres)



Test Pit 18-02 (medium to fine sand to 5.0 metres)



Test Pit 18-02 Spoil (SM³ between shovel and stake)



Test Pit 18-03 (coarse gravel to 5.0 metres)



Test Pit 18-03 Spoil (0.0 to 5.0 metres)



Test Pit 18-04 (sand underlain by SM³ at 3.1 metres)



Test Pit 18-04 Spoil (0.0 to 3.1 metres)



Test Pit 18-05 (gravel to 5.0 metres)



Test Pit 18-05 Spoil



Test Pit 18-06 (gravel to 4.8 metres)



Test Pit 18-06 Spoil (0.0 to 4.8 metres)



Test Pit 18-07 (gravel to 5.0 metres)



Test Pit 18-07 Spoil (0.0 to 5.0 metres)



Area B (potential screening plant location)

Prepared By:

A handwritten signature in blue ink, appearing to read 'LC' followed by a stylized flourish.

Laura Courtenay
Senior Aggregate Resource Specialist
Ministry of Transportation & Infrastructure
Geotechnical & Materials Engineering

Reviewed By:

Al Mitchell
Aggregate Resource Manager
Ministry of Transportation & Infrastructure
Geotechnical & Materials Engineering