

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4924				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 461.3 LHS		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7434230m E447690.2m		ELEVATION: 703m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
702.5		★ ◆ ■	█	1	GM		SILTY GRAVEL with SAND -Dark brown, compact, moist, angular -1.3m Embankment	1
701.5		★ ◆ ■	█	2	SM		SILTY SAND with GRAVEL -Dark brown, firm, moist, fibrous organics -Grinding drilling to smooth -Frozen, 5% clear ice inclusions, (Vx)	2
700.5		★ ◆ ■	█	3	GM		-Ice lens -White, cloudy, 200mm SILTY GRAVEL with SAND -Dark brown, frozen, angular -50% Ice inclusions, (Vr)	3
699.5		★ ◆ ■	█	4	SM		SILTY SAND with GRAVEL -Dark brown, stiff, frozen, angular -(Nbn)	4
698.5		★ ◆ ■	█	5	SM		-loose, not frozen, moist	5
697.5		★ ◆ ■	█	6	GM		SILTY GRAVEL with SAND -Dark brown, frozen, loose, angular -(Nf)	6
696.5			█				END of HOLE	7
695.5								8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4925				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 460.8		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7434117m E447633.2m		ELEVATION: 699.1m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>PLASTIC M.C LIQUID</p> <p>0 20 40 60 80 100</p> </div> <div style="text-align: center;"> <p>★ Percent Fines ★</p> <p>◆ Percent Sand ◆</p> <p>■ Percent Gravel ■</p> <p>0 20 40 60 80 100</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	699	●						
698							2	
697						-Dense, organic odor	3	
696	●	★ ◆ ■	GM	8			4	
695	●	★ ◆ ■	GM	9		Wet	5	
694							6	
693	●	★ ◆ ■	SM	10		SILTY SAND with GRAVEL -Brown, compact, angular -Frozen, 5% white ice grains (Vx)	7	
692							8	
691							END of HOLE	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4926				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 460.7		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7433732m E447428.8m		ELEVATION: 688.2m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE	
ELEV. (m)	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PLASTIC M.C LIQUID 0 20 40 60 80 100 0 20 40 60 80 100							
688							-Surfacing aggregate -2m Embankment -Refusal at 1m, 1m, and 0.8ms - Large rocks	
687							-Rock	1
686	●			12	SM		SILTY SAND with GRAVEL -Dark brown, wet, compact	2
685				13	SM		-Brown, free water	3
684							END of HOLE -Refusal in rock	4
683								5
682								6
681								7
680								8
					LOGGED BY: R.Stilwell		Termination Depth: 5.2m	
					COMPILED BY: g.kennedy		Complete: 9/26/2014 2:50:00 PM	
					REVIEWED BY: R.Stilwell		Pit #: n/a	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4927		
Midnight Sun Drilling		Geotech Permafrost Drilling, km 460.0		PROJECT NO: 552-202105-0104-1-4		
MARL M4CT		Coordinates: Z8W N7433088m E447151.5m		ELEVATION: m		
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE				
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■	Sample Type Sample # SOIL SYMBOL DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
					-Surfacing Aggregate -3m Embankment	
					-No sample on auger -Grinding in cobbles	1
				14 GM	SILTY GRAVEL with SAND -Dark brown, compact, moist, angular	2
				15 GM		
				16 ML	SILT with SAND -Dark brown, hard, well bonded, 5% ice crystals (Vx)	3
				17 GM	SILTY GRAVEL with SAND -Dark brown, compact, friable -No visible ice crystals (Nf)	4
				18 SM	-Not frozen -Moist, compact	5
					END of HOLE -Free water -Refusal	6
						7
						8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4933						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 410.0		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z8W N7387751m E442777.2m		ELEVATION: 730.9m						
SAMPLE TYPE		UNDISTURBED	DCPT	AUGER	BULK	SPT	CORE			
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
730						36	SM		-Surfacing Aggregate -Embankment, 2.25m LHS -Embankment, 3.5m RHS SILTY SAND -Black, dry, sub angular, elongate, compact	1
729										2
728						37	ML		SANDY SILT with GRAVEL -Dark brown, firm, moist -Frozen	3
727						38	GM		SILTY GRAVEL with SAND -Dark brown, compact -White, cloudy ice crystals, 5% (Vx)	4
726						39	SM		SILTY SAND -Dark brown mottling, loose, dry, angular, flat -Not frozen -Some gravel -Darker mottling, some moist material	5
725						40	SM			6
724										7
723										8
722									END of HOLE	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4934				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 381.6		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7371207m E426680.5m		ELEVATION: 447.5m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>★ Percent Fines ★</p> <p>◆ Percent Sand ◆</p> <p>■ Percent Gravel ■</p> </div> <div style="text-align: center;"> <p>PLASTIC</p> <p>M.C.</p> <p>LIQUID</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100							
447							-Surfacing Aggregate -4m Embankment RHS, 6-7m Embankment LHS -Grinding, cobble fill -No sample on auger	1
446								2
445								3
444							-Smoothing out	
443							-SILTY SAND -Dark grey, dry, dense	4
442							-Drill heaving	5
441							-SANDY SILT -Dark grey, dry, hard	6
440							-Very hard drilling, heaving	7
439							SILTY SAND with GRAVEL -Brown, very dense, dry	8
							END of HOLE	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4935					
Midnight Sun Drilling		Geotech Permafrost Drilling, km 380.7		PROJECT NO: 552-202105-0104-1-4					
MARL M4CT		Coordinates: Z8W N7370750m E425879.3m		ELEVATION: 408m					
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE							
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)	
	0	20	40	60					80
407.5			★	◆	■		SM	Surfacing Aggregate -3.5m Embankment RHS, 1.5M Embankment LHS SILTY SAND with GRAVEL -Brown, dry -Grinding in cobbly fill SANDY SILT -Grey, firm, dry	1
405.2			★	◆	■		OL	SANDY ORGANIC SILT -Black, soft, frozen -5% White cloudy ice crystals (Vx)	3
404.5			★	◆	■		ML	SANDY SILT -Dark brown, very stiff -20% Random ice formations (Vr)	
403.3			★	◆	■		ML	SILT with SAND -Dark grey, hard -15% Granular ice (Vx)	4
402.8			★	◆	■		ML	-25-30% Ice	5
401.5			★	◆	■		OL	-ORGANIC SILT with SAND -Dark brown, subangular -No Visible ice, bonded, frozen (Nbn)	6
400.0								END of HOLE	7
399.0									8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4936				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 378.1		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7370651m E423788.3m		ELEVATION: 375.1m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>★ Percent Fines ★</p> <p>◆ Percent Sand ◆</p> <p>■ Percent Gravel ■</p> </div> <div style="text-align: center;"> <p>PLASTIC</p> <p>M.C.</p> <p>LIQUID</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100							
375							Surfacing Aggregate WELL-GRADED SAND -Dark brown, compact, dry -Some grinding	1
374							SILT -Dark brown, moist, firm	2
373								
372								
371							SILTY SAND -Dark brown, dense -25% Random Ice formations, white, clear-cloudy -Dark grey, very dense -Decomposing organics -No visible ice, bonded, (Nbe)	4
370							SILTY SAND with GRAVEL -Dark brown, very dense, subangular -(Nbn)	5
369								
368							END of HOLE	7
367								8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4937								
Midnight Sun Drilling		Geotech Permafrost Drilling, km 376.1		PROJECT NO: 552-202105-0104-1-4								
MARL M4CT		Coordinates: Z8W N7368687m E423548.7m		ELEVATION: 482.2m								
SAMPLE TYPE		UNDISTURBED		DCPT								
		AUGER		BULK								
		SPT		CORE								
ELEV. (m)	PLASTIC	M.C.	LIQUID	★ Percent Fines ★	◆ Percent Sand ◆	■ Percent Gravel ■	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
0	20	40	60	80	100	0	20	40	60	80	100	
482											Surfacing Aggregate 4.5-5m Embankment LHS, 7m embankment RHS SILTY SAND with GRAVEL -Black, moist, compact, subrounded -Drill heaving. -Refusal, moved forward -Refusal, moved forward -Smooth to 0.75m	1
481												2
480												3
479												4
478												5
477												6
476											PEAT with ICE -Black-brown, frozen, stiff -Woody organics -15% Ice (Vx)	7
475											Ice Lens, 0.5m	8
474											PEAT with ICE -Brown, hard -Fibrous organics -15% ice (Vx) END of HOLE	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4938						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 372.6		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z8W N7365531m E423880.1m		ELEVATION: 617.9m						
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE			
ELEV. (m)	PLASTIC M.C. LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
617									Surfacing Aggregate -5-6m Embankment LHS, 2m embankment RHS SILTY SAND with GRAVEL -Black, dry, compact	1
616	●		■ ◆ ★		SM	58			-Loose	2
615					PT	59			PEAT -Woody, brown, moist, soft	3
614					PT	60			Frozen, hard -30-40% Random ice inclusions (Vr)	4
613										5
612										6
611										7
610									END of HOLE	8
609										

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4939							
Midnight Sun Drilling		Geotech Permafrost Drilling, km 372.3		PROJECT NO: 552-202105-0104-1-4							
MARL M4CT		Coordinates: Z8W N7365249.6m E423958.9m		ELEVATION: m							
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE									
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)			
	0	20	40	60					80	100	0
							Surfacing Aggregate POORLY GRADED SAND	1			
					60a	OL	SANDY ORGANIC SILT -Brown, wet, stiff -Fibrous organics	2			
					61	ML	SANDY SILT with Gravel -Dark grey, very stiff -Frozen (Nbn)	3			
					62	ML	<5% Ice crystals (Vx) -Black, stiff	4			
					63	SM	SILTY SAND with GRAVEL -Dark brown, very dense, subangular -Grinding drilling	5			
							SILT -Stratified ice, 5cm alternating (Vs)	6			
							ICE -Cloudy, discoloured, hard	7			
							END of HOLE	8			

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4940	
Midnight Sun Drilling		Geotech Permafrost Drilling, km 367.2		PROJECT NO: 552-202105-0104-1-4	
MARL M4CT		Coordinates: Z8W N7360768m E422398.3m		ELEVATION: 774.5m	
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE			
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL DESCRIPTION
	0 20 40 60 80 100		0 20 40 60 80 100		
774					Surfacing Aggregate -1.25m Embankment LHS, 2.0m embankment RHS WELL GRADED SAND with GRAVEL -Brown, dense, dry, subangular to subrounded
773					ORGANIC SILT with SAND -Dark grey, firm, moist, decomposing organics
772			64 OL		
771			65 ML		SILT with SAND -Dark grey, firm, dry -Frozen stiff (Nbn)
770					-Very hard till
769					
768					END of HOLE -Refusal
767					
766					

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4928					
Midnight Sun Drilling		Geotech Permafrost Drilling, km 440.0		PROJECT NO: 552-202105-0104-1-4					
MARL M4CT		Coordinates: Z8W N7416986m E441312m		ELEVATION: 552.5m					
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE							
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)	
	0 20 40 60 80 100		0 20 40 60 80 100						
552	●		★	◆	■	19	SM	Surfacing Aggregate 1.7m Embankment LHS, 1.0m embankment RHS SILTY SAND with GRAVEL -Black, compact, dry	
551			★	◆	■	20	PT	PEAT -Dark brown, soft, moist -Fibrous organics	1
550	●		★	◆	■	21	OL	-Black, frozen, stiff -5% Icy inclusions, cloudy white crystals (Vx)	2
549			★	◆	■	22	ML	PEAT with ICE - 20% Random ice inclusions (Vr)	3
548			★	◆	■	23	ML	SANDY SILT -Black, stiff -5% ice crystals (Vx)	4
547	●		★	◆	■			END of HOLE -Refusal	5
546									6
545									7
544									8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4929						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 414.9		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z8W N7392454m E441367m		ELEVATION: 652.1m						
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE			
ELEV. (m)	PLASTIC M.C. LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
652									Surfacing Aggregate -3.6-4.2m Embankment LHS, 3-3.5m Embankment RHS	
651									WELL-GRADED GRAVEL with SAND -Black, moist, compact, angular	1
650									-Grinding in cobbles	2
649	●		★ ◆ ■			24	GM		SILTY GRAVEL with SAND -Wet, dense	3
648									-No Grinding	4
647						25	GM		-Grinding in cobbles	5
646									SILTY GRAVEL with SAND -Black, dense, angular -Fresh fracture faces and drilling conditions suggest pulverized cobbles	6
645									END of HOLE -Refusal	7
644										8
					LOGGED BY: R.Stilwell		Termination Depth: 5.3m			
					COMPILED BY: g.kennedy		Complete: 9/27/2014 12:35:00 PM			
					REVIEWED BY: R.Stilwell		Pit #: n/a		Page 1 of 1	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4930						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 453.3		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z8W N7426623m E446165.6m		ELEVATION: 622.9m						
SAMPLE TYPE		UNDISTURBED	DCPT	AUGER	BULK	SPT	CORE			
ELEV. (m)	PLASTIC M.C. LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
622	●		■ ◆ ★		SM	26		Surfacing Aggregate -0.8m Embankment LHS, 1.0m embankment RHS SILTY SAND with GRAVEL -Black, loose, moist	1	
621	●		■ ◆ ★		SM	27		-Frozen -Compact, firm	2	
620	●		■ ◆ ★		SM	28		-Black, dense -Frozen (Nbe) Not frozen END of HOLE -Refusal	3	
619									4	
618									5	
617									6	
616									7	
615									8	
614										

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4931				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 459.3		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7432350m E447033.4m		ELEVATION: 747.6m				
SAMPLE TYPE	<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE		
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	747							
746					29	GM	Surfacing Aggregate 2.3m Embankment LHS, 1.7m Embankment RHS SILTY GRAVEL with SAND -Black, compact, moist -Grinding	1
745					30	SM	SILTY SAND with GRAVEL -Fibrous organics -Brown, loose	2
744					31	ML	SANDY SILT with ICE -Black, hard, well bound 20% Ice inclusions (Vx)	3
744					32	SM	WELL-GRADED GRAVEL with SAND -Dark brown, dense -Well bound (Nbe)	4
743							END of HOLE -Refusal	4
742								5
741								6
740								7
739								8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4932						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 421.3		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z8W N7398620m E440033.7m		ELEVATION: 656.1m						
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE			
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
656									Surfacing Aggregate	
655	●		★ ◆ ■		33	GP-GM		POORLY GRADED GRAVEL with SILT and SAND -Black, compact, moist		1
654	●		★ ◆ ■		34	SM		SILTY SAND with GRAVEL -Brown, very dense, moist -Fibrous organics		2
653					35	OL		ORGANIC SILT with ICE -Brown, Hard -20% Random ice inclusions (Vr), cloudy white		3
652								ICE with ORGANIC SILT -80% ice, 20% Dark brown silt		4
651								ICE -Clear, some discolouration, no inclusions, hard		5
650										6
649								END of HOLE		7
648										8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4941						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 351.9 LHS		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z8W N7349473m E417921m		ELEVATION: 748.3m						
SAMPLE TYPE		UNDISTURBED	DCPT	AUGER	BULK	SPT	CORE			
ELEV. (m)	PLASTIC M.C. LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
748									Surfacing Aggregate 2m Embankment LHS, 7-8m Embankment RHS WELL-GRADED GRAVEL with SILT -Brown, compact, dry, subrounded -Grinding, cobbles	1
747									SILTY SAND with GRAVEL -Black, loose, dry -decomposed organics -Smooth drilling	2
746						66	SM		ORGANIC SILT with SAND -Black, dry, very stiff -Fibrous	3
745						67	ML		SILT with SAND -Brown -Frozen (Nbn)	4
744						68a	ML		SANDY SILT with GRAVEL -5% ice crystals (Vx)	5
743						68	ML		WELL-GRADED SAND with GRAVEL -Black, dense, angular, flat -Frozen, fissile (Nf)	6
742						69	SW		END of HOLE	7
741										8
740										

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4942				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 351.6		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z8W N7349353m E417725.1m		ELEVATION: 748.3m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>★ Percent Fines ★</p> <p>◆ Percent Sand ◆</p> <p>■ Percent Gravel ■</p> </div> <div style="text-align: center;"> <p>PLASTIC</p> <p>M.C.</p> <p>LIQUID</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	<div style="display: flex; justify-content: space-between;"> 0 20 40 60 80 100 0 20 40 60 80 100 </div>							
748							Surfacing Aggregate -2.25m Embankment LHS, 14m Embankment RHS WELL-GRADED GRAVEL with SILT and SAND -Brown, compact, dry -Grinding ORGANIC SILT -Black, soft, dry	1
747								
746				70	SM			2
745				71	ML		ORGANIC SILT with GRAVEL -Black, very stiff, rare ice crystal (Vx) -Very tight drilling	3
744								4
743				72	ML		SILT -Black-grey, very stiff -frozen, bonded (Nbn)	5
743				73	PT		PEAT with ICE -Brown, very stiff -Woody -15% Ice (Vx)	6
742				74	SM		SILTY SAND with GRAVEL -Brown, very dense, angular -5% Ice crystals (Vx)	7
741							END of HOLE	8
740								

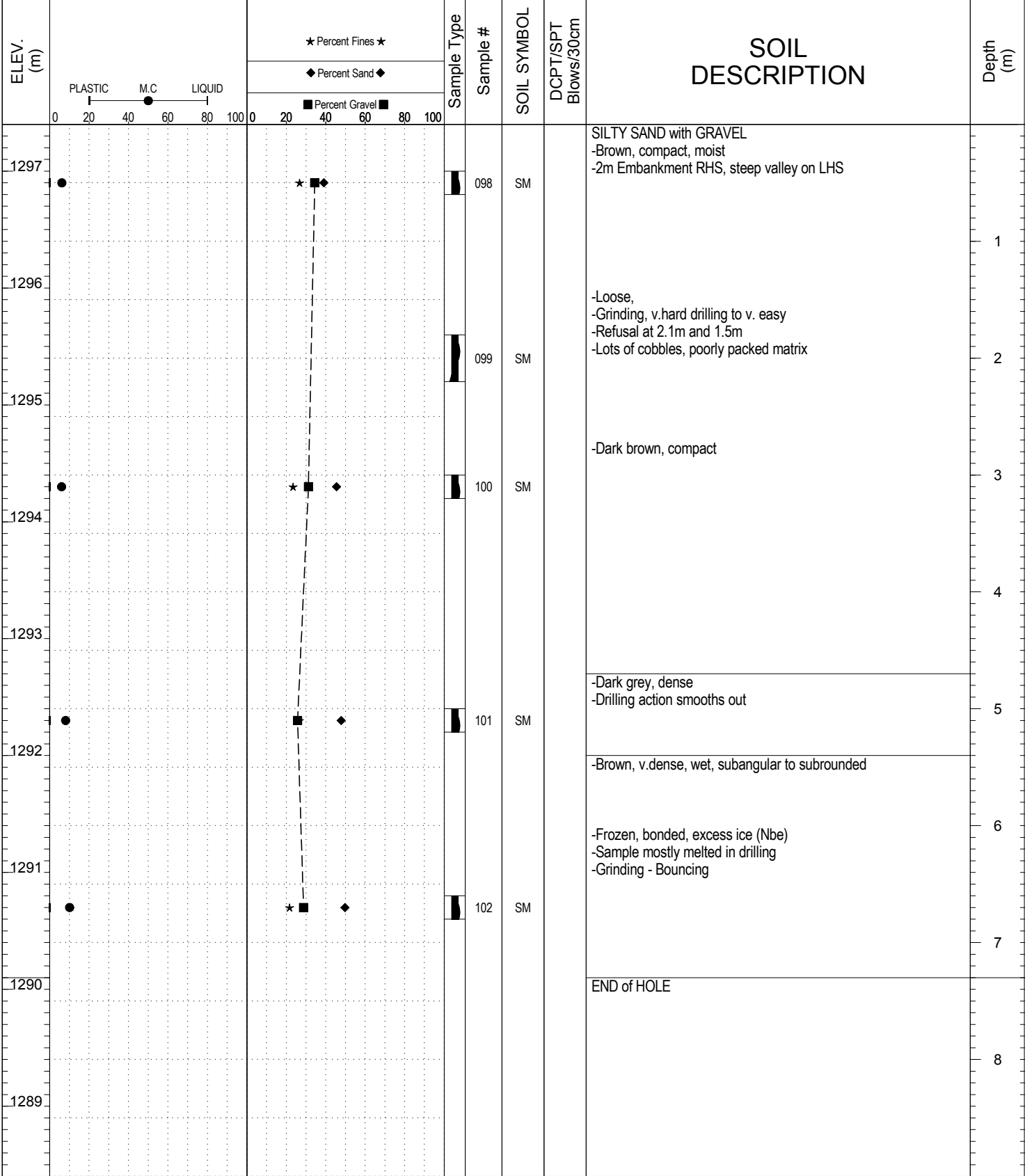
SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4943				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 245.0 S		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7291512m E362900.2m		ELEVATION: 550.4m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PLASTIC M.C. LIQUID 0 20 40 60 80 100 0 20 40 60 80 100							
550	★ ◆ ■		Core	75	GP-GM		Surfacing Aggregate -1.75m Embankment LHS, 1.25m Embankment RHS POORLY GRADED GRAVEL with SILT and SAND -Brown, compact, dry, subrounded	1
549							-Grinding	
548			Core	76	GP-GM		-Fairly smooth	2
547			Core	77	GP-GM		SILTY GRAVEL -Dark brown, dense, wet, rounded -Grinding	3
546							POORLY GRADED SAND and SILT -Seasonal banding of sand and silt -Dark grey, wet, stiff silt, loose sand	4
545			Core	78	SP			5
544			Core	79	SP		-Some mottling, dry patches	6
543							END of HOLE	7
542								8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4944				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 245.0 N		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7291518m E362918.7m		ELEVATION: 551.7m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PLASTIC M.C. LIQUID 0 20 40 60 80 100							
551	★ ◆ ■		80	GW-GM			WELL-GRADED GRAVEL with SILT and SAND -Dark grey, dry, compact, subrounded-rounded -Grinding	1
550								2
549	★ ◆ ■		81	GM			SILTY GRAVEL with SAND -Dark brown, wet, very dense, rounded - subrounded	3
548								4
547			82	GM			WELL-GRADED GRAVEL with SAND -dense	5
546	★ ◆ ■		83	SM			SILTY SAND with GRAVEL -Layered poorly graded sand and silt (SP, ML) -Some mottling of dry material in saturated material -Dark grey, very stiff	6
545								7
544							END of HOLE	8
543								
			LOGGED BY: R.Stilwell COMPILED BY: g.kennedy REVIEWED BY: R.Stilwell		Termination Depth: 7m Complete: 9/29/2014 4:40:00 PM Pit #: n/a			Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4946				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 237.0 LHS		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7286576m E632299.2m		ELEVATION: 511.4m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PLASTIC M.C. LIQUID 0 20 40 60 80 100 0 20 40 60 80 100							
511							Surfacing Aggregate -0.25m Embankment, LHS WELL-GRADED GRAVEL with SILT -Dark brown, compact, dry, subrounded	
510							PEAT -Black, partially decomposed, fibrous/woody -Dry, soft	1
509							SILTY GRAVEL -Black, wet, stiff -Grinding	2
508				88			POORLY GRADED GRAVEL with SILT -Layered silt and poorly graded gravel -Dark brown, wet, dense, subrounded-rounded	3
507							-Frozen, fissile (Nf) -Very hard drilling, very dense	4
506	●	★ ■ ◆		89	SM		-END of HOLE -Refusal	5
505								6
504								7
503								8

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4948					
Midnight Sun Drilling		Geotech Permafrost Drilling, 129.0 N		PROJECT NO: 552-202105-0104-1-4					
MARL M4CT		Coordinates: Z7W N7205059m E628834.4m		ELEVATION: 935.7m					
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input checked="" type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE		
ELEV. (m)		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
		0 20 40 60 80 100							
935								POORLY GRADED GRAVEL with SAND -Brown, compact, dry	1
934									2
933					95	SM		SILTY SAND -Black, moist, compact, organics	
932					96	SM		-Dense, Frozen (Nbn)	3
932					97	SM		SILTY SAND with GRAVEL -Dark brown, very dense	4
931								END of HOLE -Refusal	5
930									6
929									7
928									8
927									
						LOGGED BY: R.Stilwell COMPILED BY: g.kennedy REVIEWED BY: R.Stilwell		Termination Depth: 4.3m Complete: 9/30/2014 1:45:00 PM Pit #: n/a	

SAMPLE TYPE UNDISTURBED DCPT AUGER BULK SPT CORE



GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4924
Midnight Sun Drilling	km 461.3 LHS	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7434230m E447690.2m	ELEVATION: 703m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H ₂ O	LL	PL	PI	C _c	C _u
● 1	295	0.2 to 0.5	SILTY GRAVEL with SAND(GM)	3.3	NP	NP	NP		
☒ 2	296	1.5 to 1.8	SILTY SAND with GRAVEL(SM)	34.3	NP	NP	NP		
▲ 3	297	3.0 to 3.3	SILTY GRAVEL with SAND(GM)	34.8	NP	NP	NP		
★ 5	299	4.8 to 5.1	SILTY SAND with GRAVEL(SM)	16.8	NP	NP	NP		

Field #	Lab #	% PASSING	Sieve Size (mm)													% Breakdown				
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 1	295	100.0	100.0	100.0	100.0	82.8	70.1	55.6	48.6	35.7	27.6	22.1	18.6	16.0	14.3	12.9	64.3	22.8	12.9	
☒ 2	296	100.0	100.0	100.0	94.9	93.5	87.1	81.2	64.4	51.6	41.9	35.4	30.0	22.5	15.2		35.6	49.3	15.2	
▲ 3	297	100.0	100.0	100.0	92.9	90.7	76.6	69.5	50.5	38.9	31.5	27.2	24.4	22.0	18.6		49.5	32.0	18.6	
★ 5	299	100.0	100.0	100.0	100.0	98.6	95.6	90.2	64.2	43.3	31.4	25.0	21.3	19.1	17.2		35.8	47.1	17.2	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



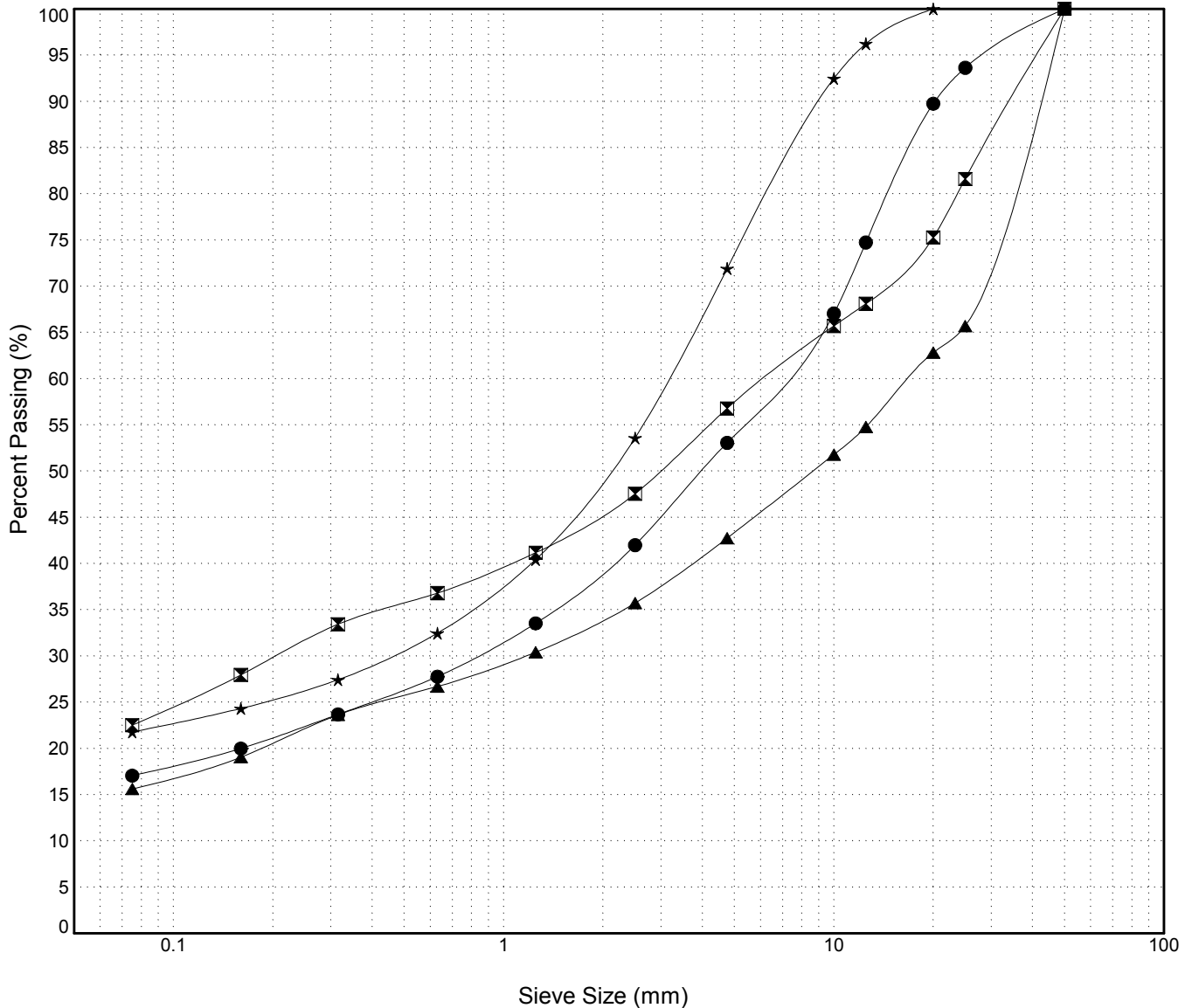
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4925
Midnight Sun Drilling	km 460.8	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7434117m E447633.2m	ELEVATION: 699.1m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 7	301	0.1 to 0.3	SILTY GRAVEL with SAND(GM)	2.9	NP	NP	NP		
☒ 8	302	2.4 to 2.7	SILTY GRAVEL with SAND(GM)	19.3	NP	NP	NP		
▲ 9	303	3.4 to 3.7	SILTY GRAVEL with SAND(GM)	19.4	NP	NP	NP		
★ 11	305	6.0 to 6.4	SILTY SAND with GRAVEL(SM)	10.0	NP	NP	NP		

Field #	Lab #	%PASSING	Sieve Size (mm)													% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt Clay
● 7	301	100.0	100.0	100.0	100.0	93.6	89.7	74.7	67.0	53.1	42.0	33.5	27.8	23.7	20.0	17.1	46.9	36.0	17.1
☒ 8	302	100.0	100.0	100.0	81.6	75.3	68.1	65.7	56.8	47.5	41.2	36.8	33.4	28.0	22.5	17.1	43.2	34.3	22.5
▲ 9	303	100.0	100.0	100.0	65.7	62.8	54.8	51.8	42.7	35.7	30.4	26.7	23.6	19.0	15.6	11.9	57.3	27.1	15.6
★ 11	305	100.0	100.0	100.0	100.0	96.2	92.5	71.9	53.6	40.4	32.5	27.4	24.3	21.8	17.1	11.9	28.1	50.1	21.8

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

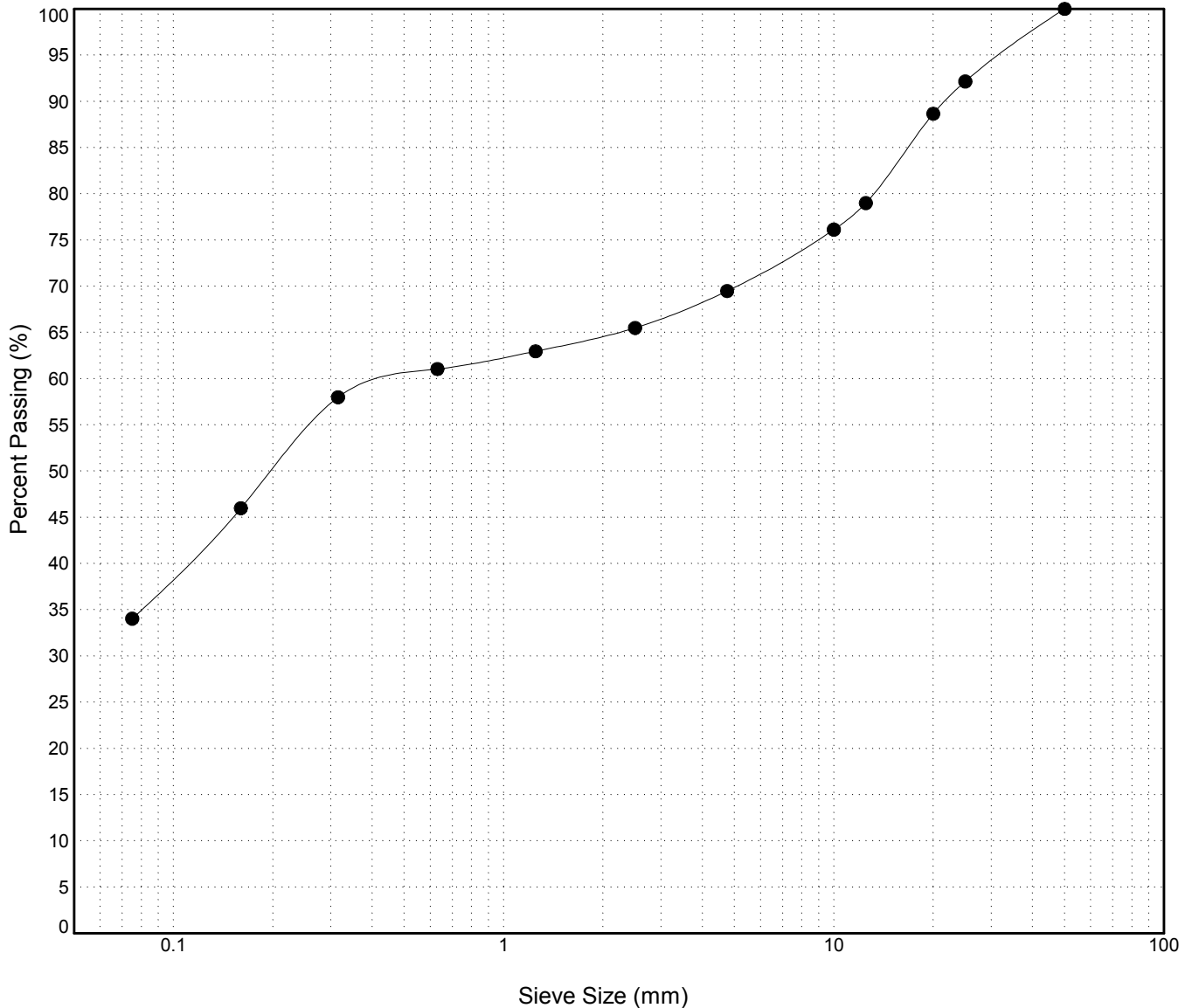


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4926
Midnight Sun Drilling	km 460.7	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7433732m E447428.8m	ELEVATION: 688.2m

Master Revised July 2013

Field #	Lab #	Depth	Classification											%H2O	LL	PL	PI	Cc	Cu		
● 12	306	1.8 to 2.0	SILTY SAND with GRAVEL(SM)											12.0	NP	NP	NP				
Field #	Lab #		100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown				
● 12	306	% PASSING	100.0	100.0	100.0	92.1	88.7	79.0	76.1	69.5	65.5	63.0	61.0	58.0	46.0	34.0	30.5	35.4	34.0		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



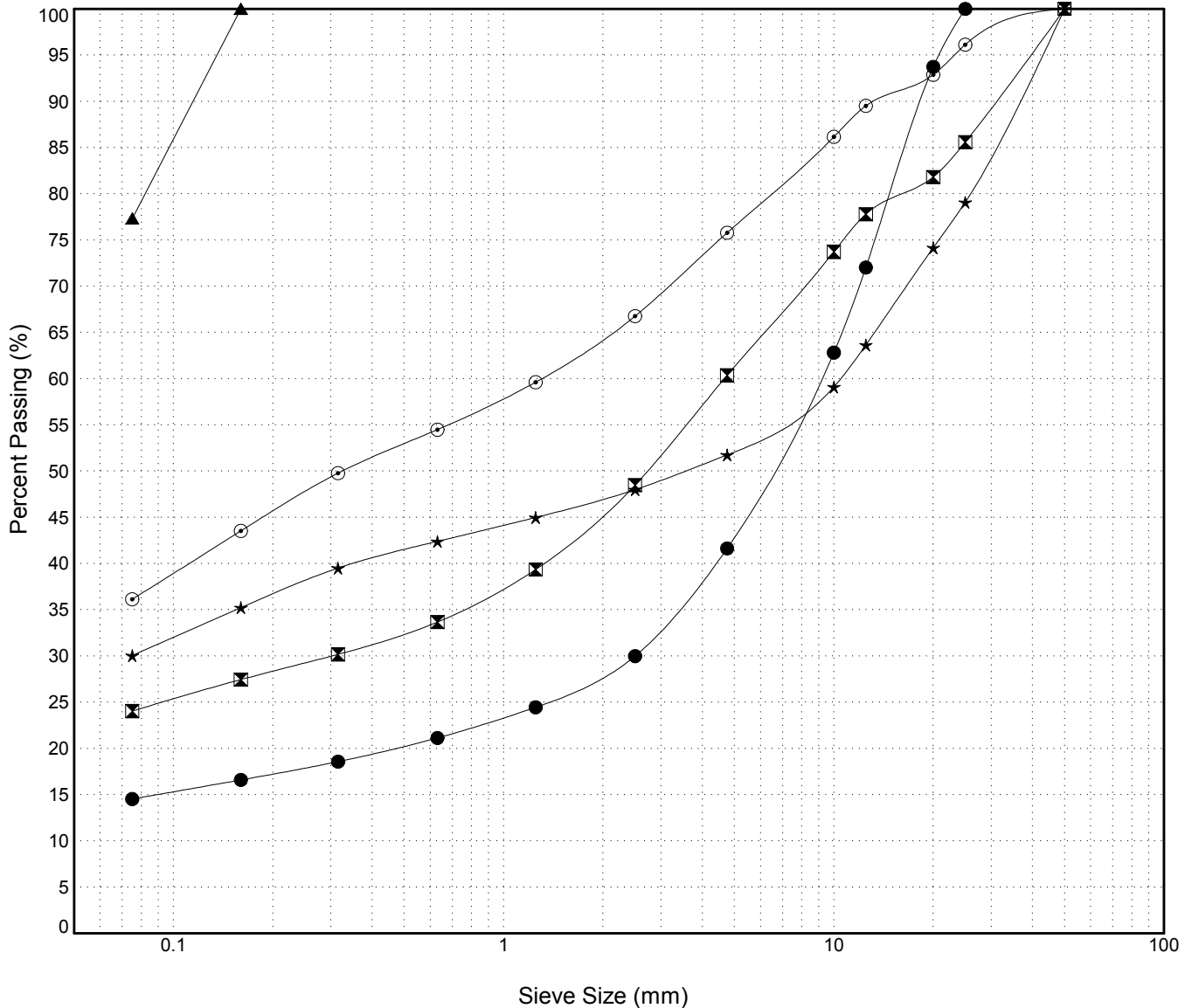
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4927
Midnight Sun Drilling	km 460.0	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7433088m E447151.5m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 14	308	1.5 to 1.8	SILTY GRAVEL with SAND(GM)	4.6	NP	NP	NP		
☒ 15	309	2.2 to 2.8	SILTY GRAVEL with SAND(GM)	21.9	NP	NP	NP		
▲ 16	310	3.0 to 3.4	SILT with SAND(ML)	108.0	NP	NP	NP		
★ 17	311	4.2 to 4.5	SILTY GRAVEL with SAND(GM)	20.4	NP	NP	NP		
⊙ 18	312	4.8 to 5.0	SILTY SAND with GRAVEL(SM)	22.1	NP	NP	NP		

Field #	Lab #	%PASSING														% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt
● 14	308	100.0	100.0	100.0	100.0	93.7	72.0	62.8	41.6	30.0	24.4	21.1	18.6	16.6	14.5	58.4	27.1	14.5	
☒ 15	309	100.0	100.0	100.0	85.6	81.8	77.8	73.7	60.4	48.5	39.4	33.7	30.2	27.4	24.0	39.6	36.3	24.0	
▲ 16	310	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	77.3	0.0	22.7	77.3	
★ 17	311	100.0	100.0	100.0	79.1	74.2	63.6	59.1	51.8	48.0	45.0	42.4	39.5	35.2	30.0	48.2	21.7	30.0	
⊙ 18	312	100.0	100.0	100.0	96.1	92.9	89.5	86.2	75.8	66.8	59.6	54.5	49.8	43.5	36.1	24.2	39.6	36.1	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



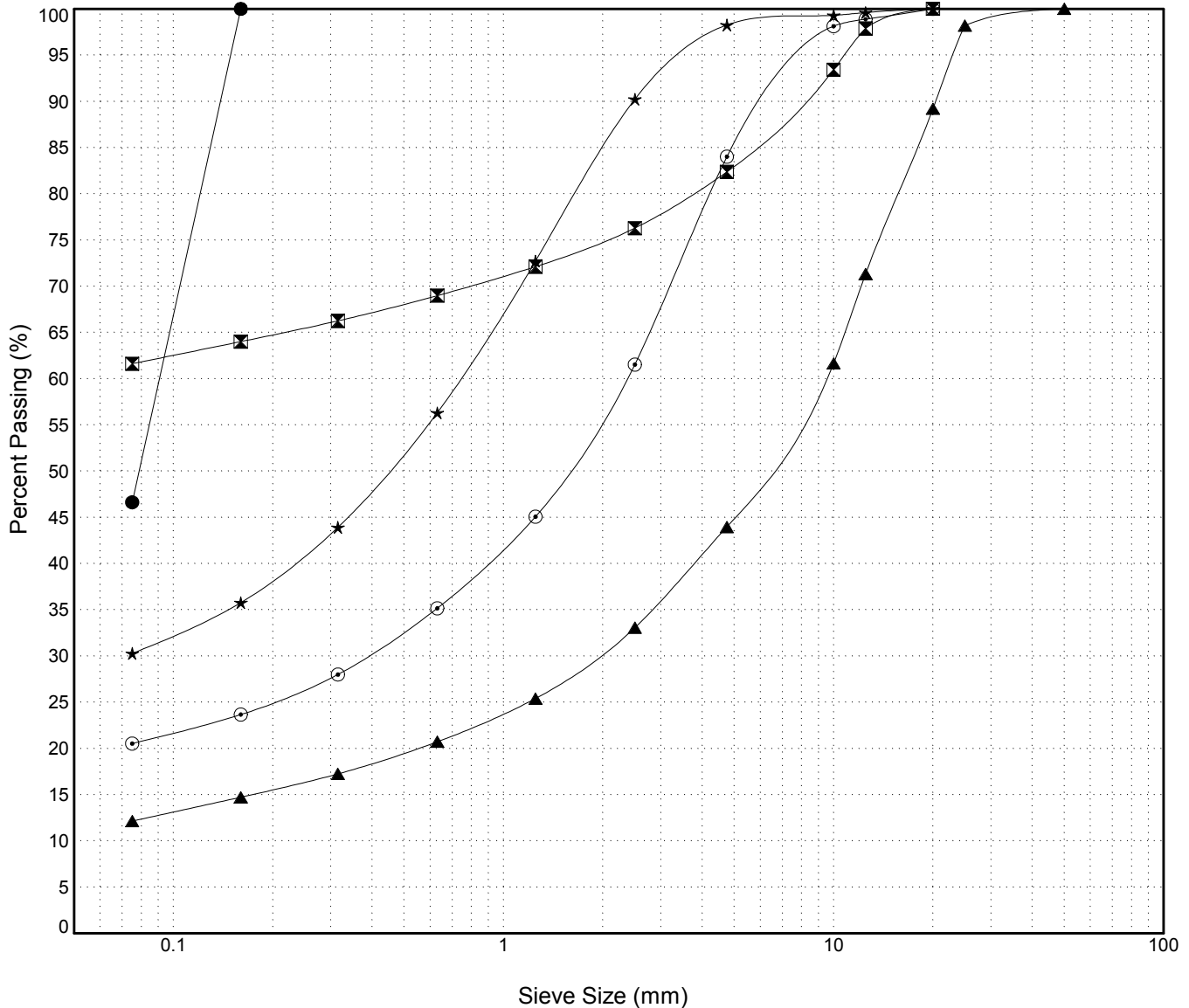
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4933
Midnight Sun Drilling	km 410.0	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7387751m E442777.2m	ELEVATION: 730.9m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 36	330	1.0 to 1.3	SILTY SAND(SM)	58.1	NP	NP	NP		
☒ 37	331	2.9 to 3.2	SANDY SILT with GRAVEL(ML)	36.7	NP	NP	NP		
▲ 38	332	3.8 to 4.0	SILTY GRAVEL with SAND(GM)	5.2	NP	NP	NP	9.6	231.5
★ 39	333	4.6 to 4.8	SILTY SAND(SM)	12.7	NP	NP	NP		
⊙ 40	334	6.0 to 6.2	SILTY SAND with GRAVEL(SM)	8.9	NP	NP	NP		

Field #	Lab #	%PASSING	% Breakdown																	
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 36	330	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	46.6	0.0	53.4	46.6
☒ 37	331	100.0	100.0	100.0	100.0	100.0	97.9	93.4	82.4	76.3	72.1	69.0	66.3	64.0	61.6		17.6	20.8	61.6	
▲ 38	332	100.0	100.0	100.0	98.2	89.2	71.3	61.7	44.0	33.1	25.4	20.7	17.2	14.7	12.1		56.0	31.8	12.1	
★ 39	333	100.0	100.0	100.0	100.0	100.0	99.6	99.3	98.3	90.2	72.7	56.3	43.9	35.8	30.3		1.7	68.0	30.3	
⊙ 40	334	100.0	100.0	100.0	100.0	100.0	98.9	98.1	84.0	61.5	45.1	35.2	28.0	23.7	20.5		16.0	63.5	20.5	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



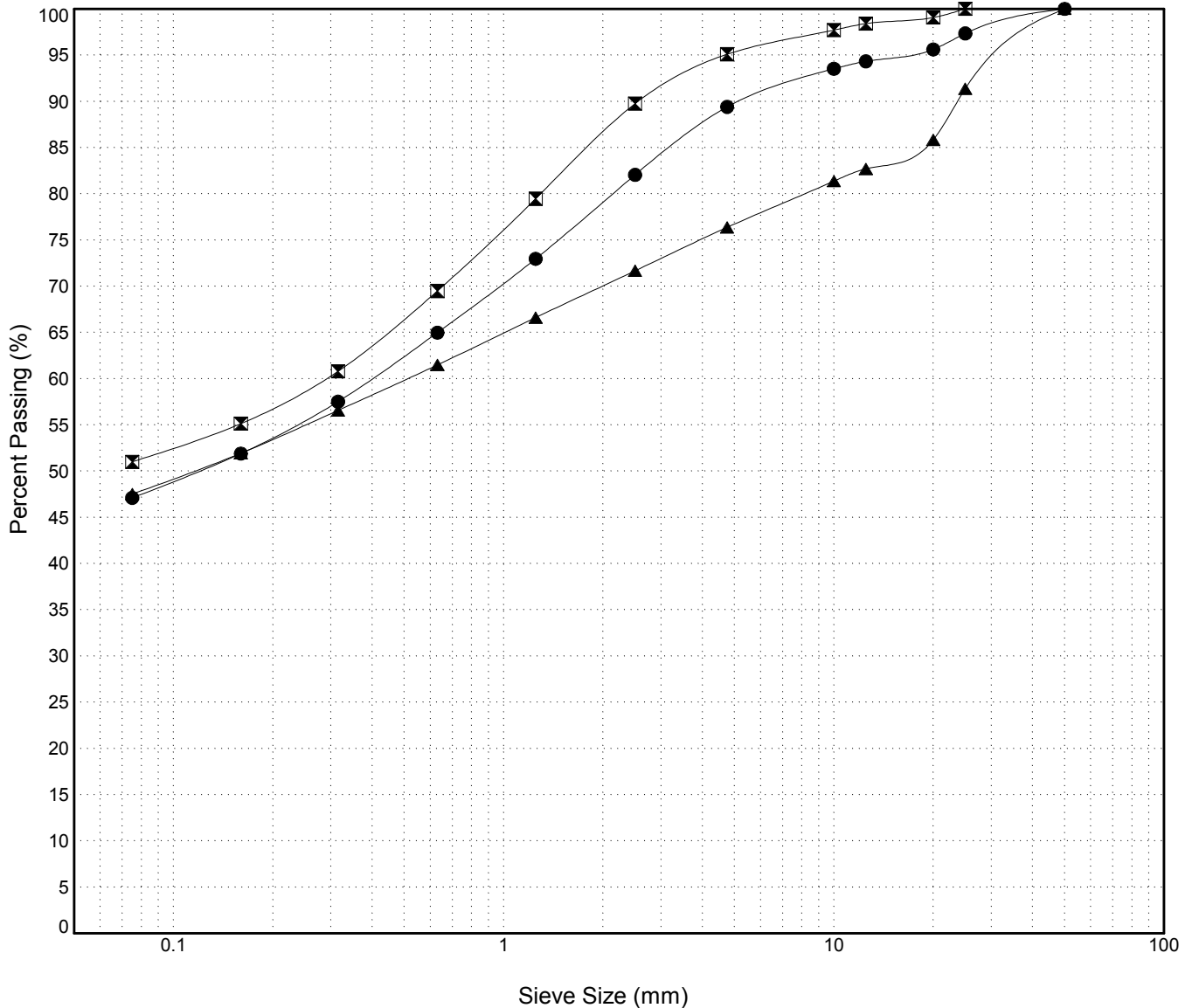
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4934
Midnight Sun Drilling	km 381.6	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7371207m E426680.5m	ELEVATION: 447.5m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 41	335	3.8 to 4.0	SILTY SAND(SM)	9.9	NP	NP	NP		
☒ 42	336	6.4 to 6.6	SANDY SILT(ML)	12.4	NP	NP	NP		
▲ 43	337	7.6 to 8.0	SILTY SAND with GRAVEL(SM)	10.2	NP	NP	NP		

Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
		% PASSING														Gravel	Sand	Silt	Clay
● 41	335	100.0	100.0	100.0	97.3	95.6	94.3	93.5	89.4	82.0	73.0	65.0	57.5	51.9	47.1	10.6	42.3	47.1	
☒ 42	336	100.0	100.0	100.0	100.0	99.1	98.4	97.7	95.1	89.8	79.5	69.5	60.8	55.1	51.0	4.9	44.1	51.0	
▲ 43	337	100.0	100.0	100.0	91.4	85.8	82.7	81.4	76.4	71.7	66.6	61.5	56.6	51.9	47.5	23.6	28.9	47.5	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



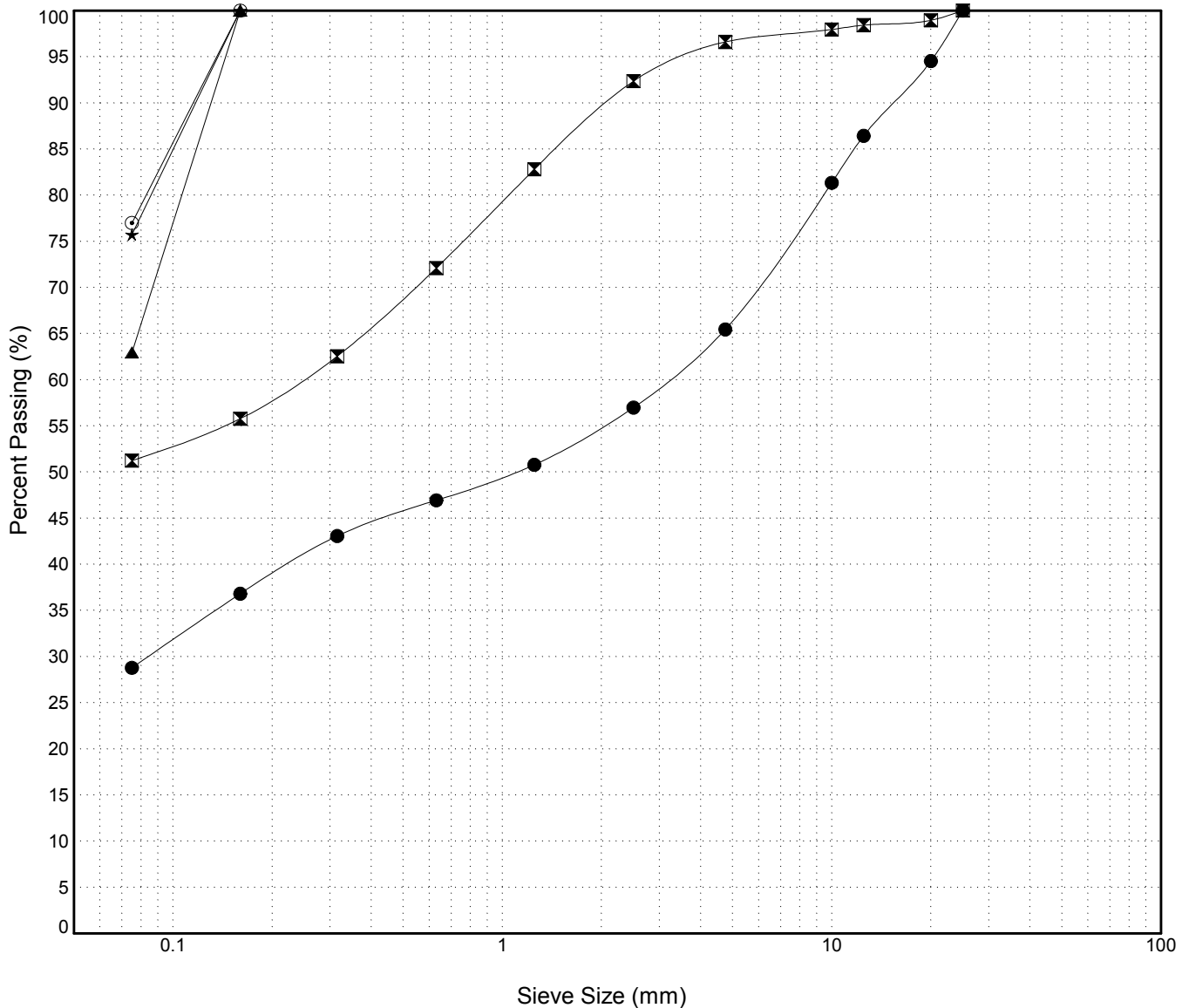
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4935
Midnight Sun Drilling	km 380.7	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7370750m E425879.3m	ELEVATION: 408m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 44	338	0.4 to 0.6	SILTY SAND with GRAVEL(SM)	2.6	NP	NP	NP		
☒ 45	339	2.6 to 3.0	SANDY ORGANIC SILT(OL)	4.6	NP	NP	NP		
▲ 46	340	3.4 to 3.6	SANDY SILT(ML)	59.7	NP	NP	NP		
★ 47	341	4.6 to 4.8	SILT with SAND(ML)	38.5	NP	NP	NP		
⊙ 48	342	5.0 to 5.2	SILT with SAND(ML)	35.5	NP	NP	NP		

Field #	Lab #	% PASSING															% Breakdown			
		100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay	
● 44	338	100.0	100.0	100.0	100.0	94.5	86.4	81.3	65.5	57.0	50.8	46.9	43.1	36.8	28.8	34.5	36.7	28.8		
☒ 45	339	100.0	100.0	100.0	100.0	99.0	98.4	98.0	96.6	92.4	82.8	72.1	62.5	55.8	51.2	3.4	45.4	51.2		
▲ 46	340	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	63.0	0.0	37.0	63.0		
★ 47	341	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	75.7	0.0	24.3	75.7		
⊙ 48	342	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	77.0	0.0	23.0	77.0		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

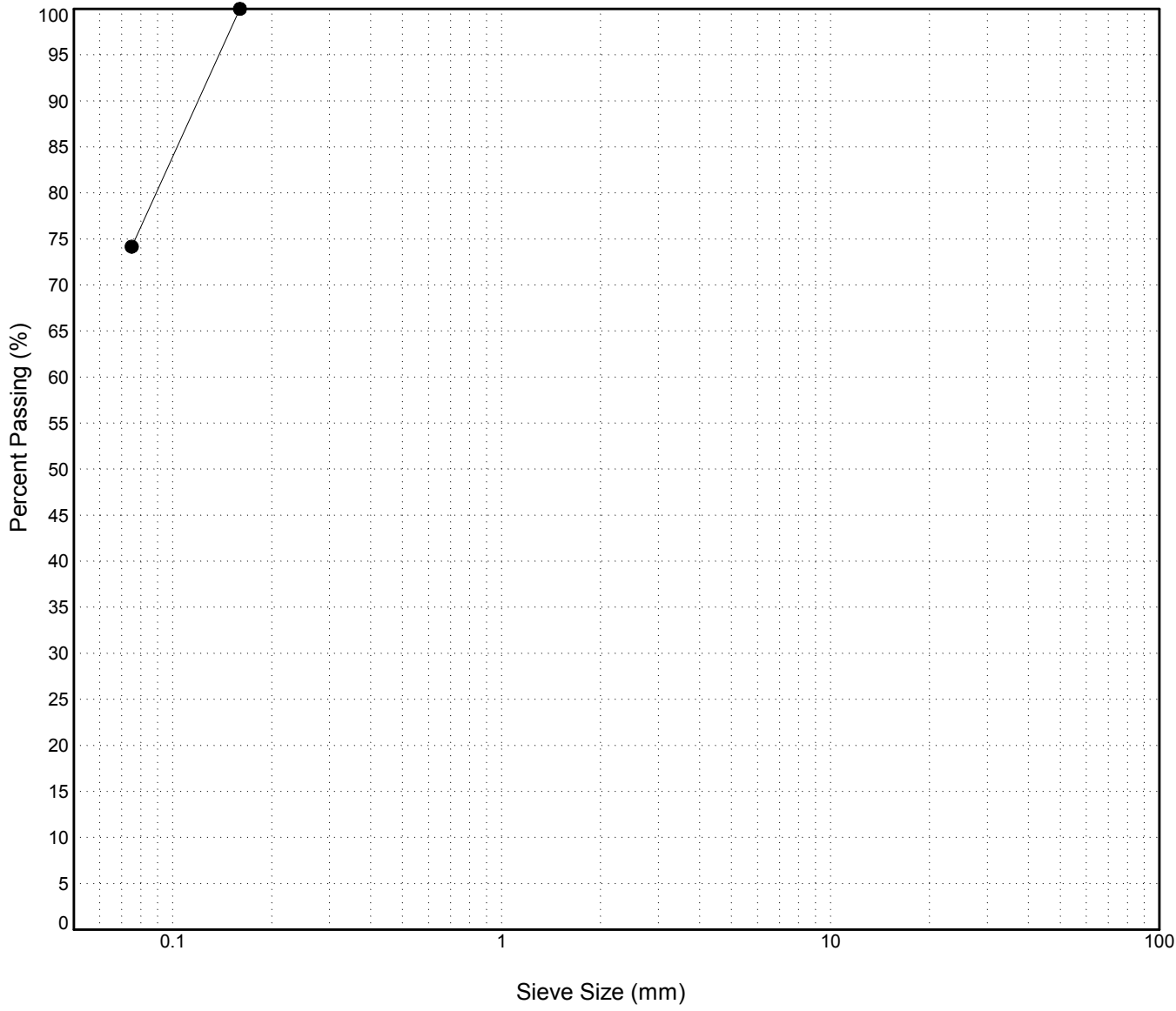


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4935
Midnight Sun Drilling	km 380.7	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7370750m E425879.3m	ELEVATION: 408m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu										
● 49	343	6.2 to 6.4	ORGANIC SILT with SAND(OL)	24.1	NP	NP	NP												
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
● 49	343	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	74.2	0.0	25.8	74.2	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



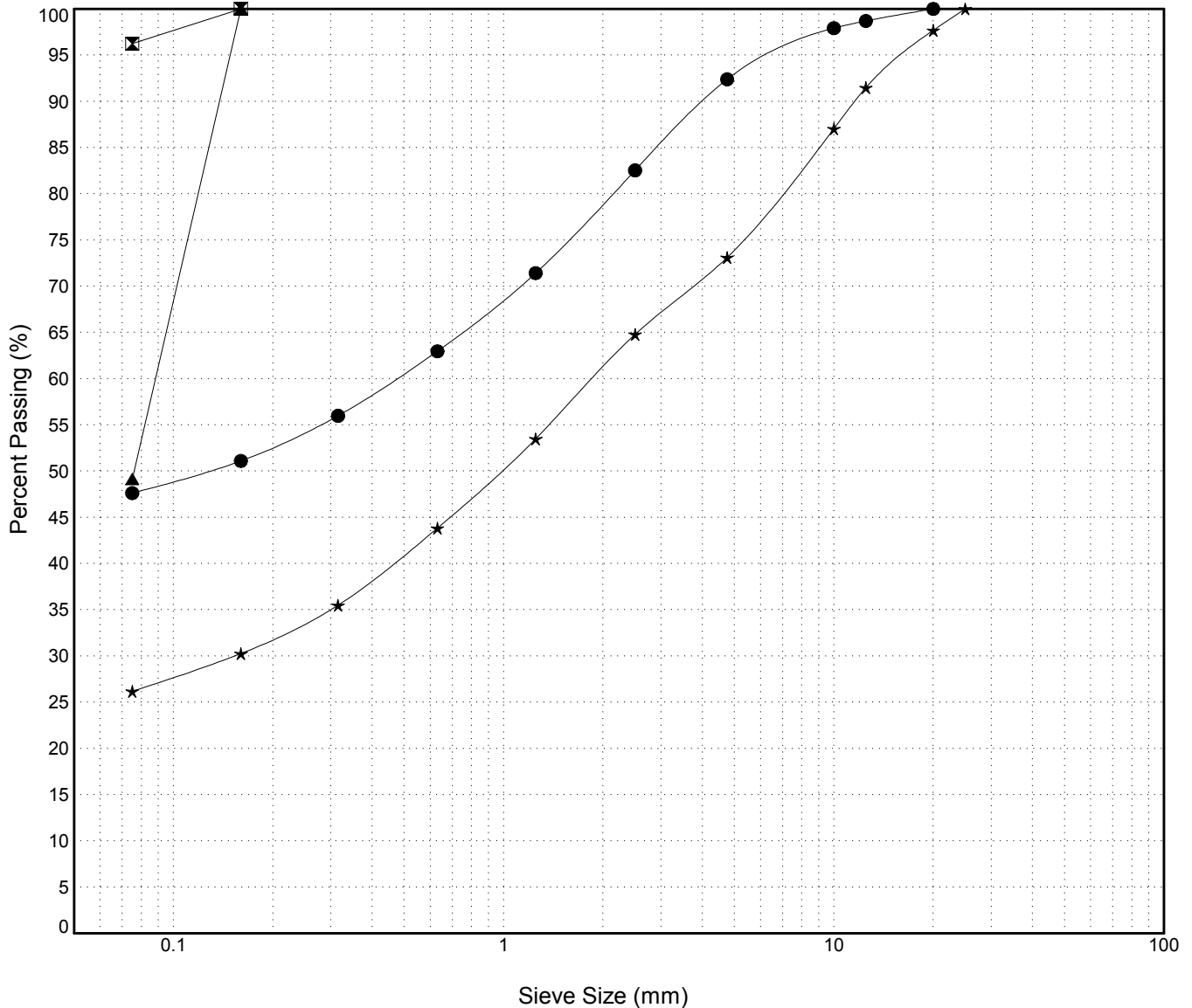
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4936
Midnight Sun Drilling	km 378.1	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7370651m E423788.3m	ELEVATION: 375.1m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 50	344	2.2 to 2.6	SILTY SAND(SM)	13.1	NP	NP	NP		
☒ 51	345	3.6 to 3.8	SILT(ML)	68.2	NP	NP	NP		
▲ 52	346	5.0 to 5.2	SILTY SAND(SM)	49.4	NP	NP	NP		
★ 53	347	6.4 to 6.6	SILTY SAND with GRAVEL(SM)	16.9	NP	NP	NP		

Field #	Lab #	% PASSING	Sieve Size (mm)														% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 50	344	100.0	100.0	100.0	100.0	100.0	100.0	98.7	97.9	92.4	82.5	71.4	63.0	56.0	51.1	47.6	7.6	44.8	47.6	
☒ 51	345	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.2	0.0	3.8	96.2	
▲ 52	346	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	49.1	0.0	50.9	49.1	
★ 53	347	100.0	100.0	100.0	100.0	97.7	91.5	87.0	73.1	64.8	53.5	43.8	35.5	30.3	26.2	26.9	46.9	26.2		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

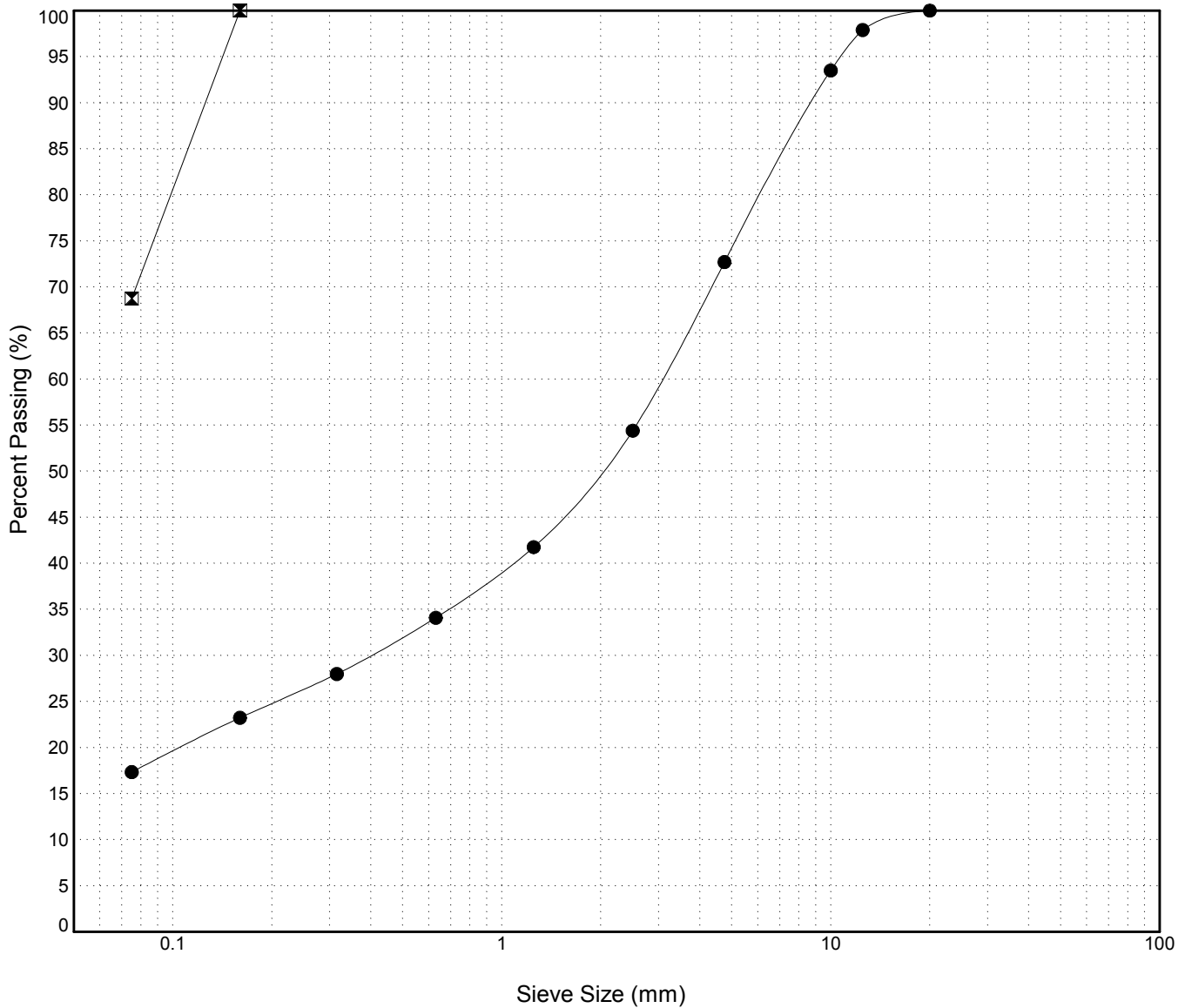


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4937
Midnight Sun Drilling	km 376.1	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7368687m E423548.7m	ELEVATION: 482.2m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu											
● 54	348	2.0 to 2.5	SILTY SAND with GRAVEL(SM)	9.5	NP	NP	NP													
☒ 56	350	6.4 to 6.6	SANDY ORGANIC SILT(OL)	111.8	NP	NP	NP													
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown				
● 54	348	100.0	100.0	100.0	100.0	100.0	97.9	93.5	72.7	54.4	41.8	34.1	28.0	23.2	17.3	Gravel	Sand	Silt	Clay	
☒ 56	350	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	68.7	0.0	31.3	68.7		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

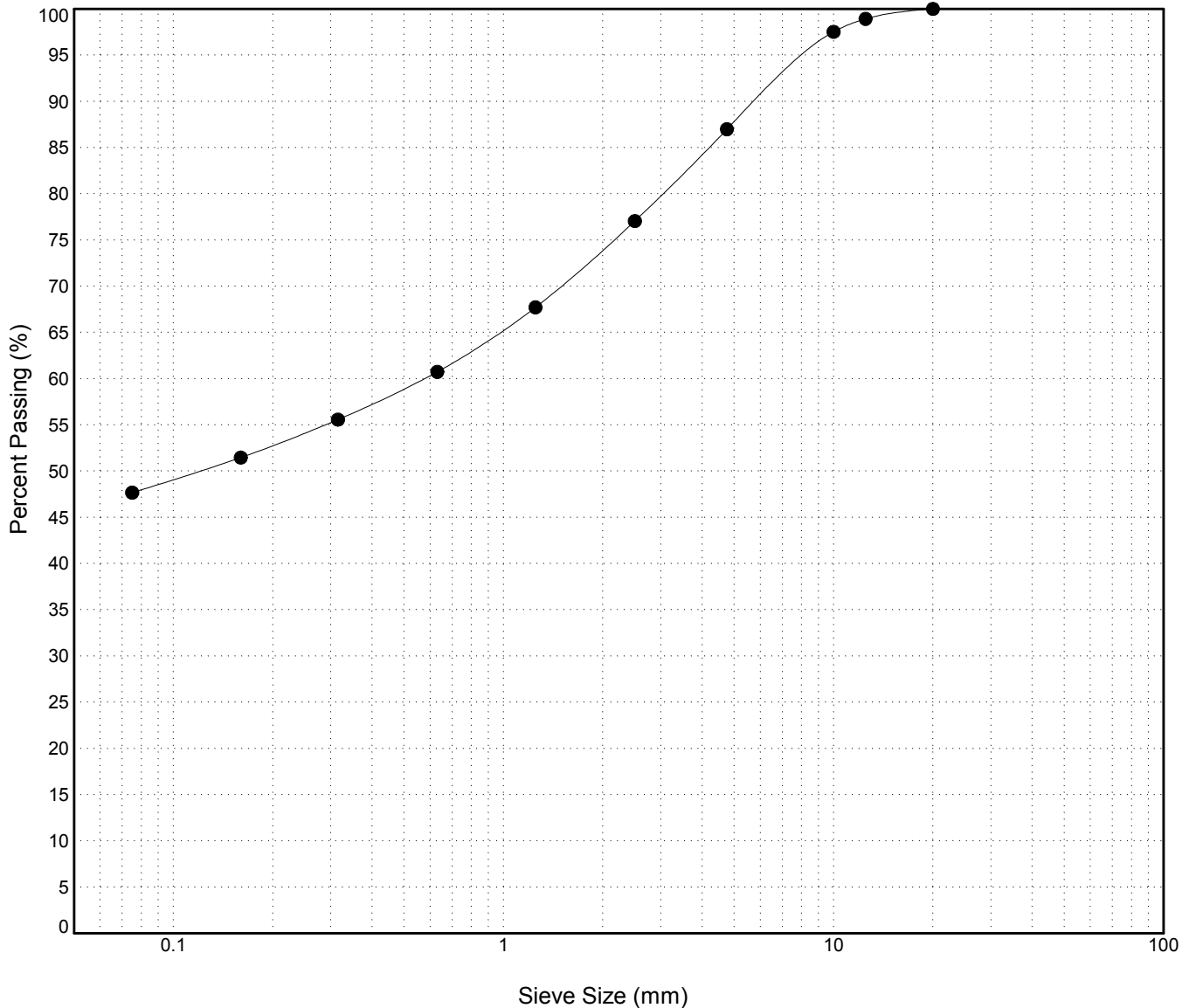


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4938
Midnight Sun Drilling	km 372.6	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7365531m E423880.1m	ELEVATION: 617.9m

Master Revised July 2013

Field #	Lab #	Depth	Classification											%H2O	LL	PL	PI	Cc	Cu	
● 58	351	1.5 to 1.8	SILTY SAND(SM)											22.3	NP	NP	NP			
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown				
● 58	351	100.0	100.0	100.0	100.0	100.0	98.9	97.5	87.0	77.1	67.7	60.7	55.6	51.5	47.7	Gravel	Sand	Silt	Clay	
																13.0	39.3	47.7		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



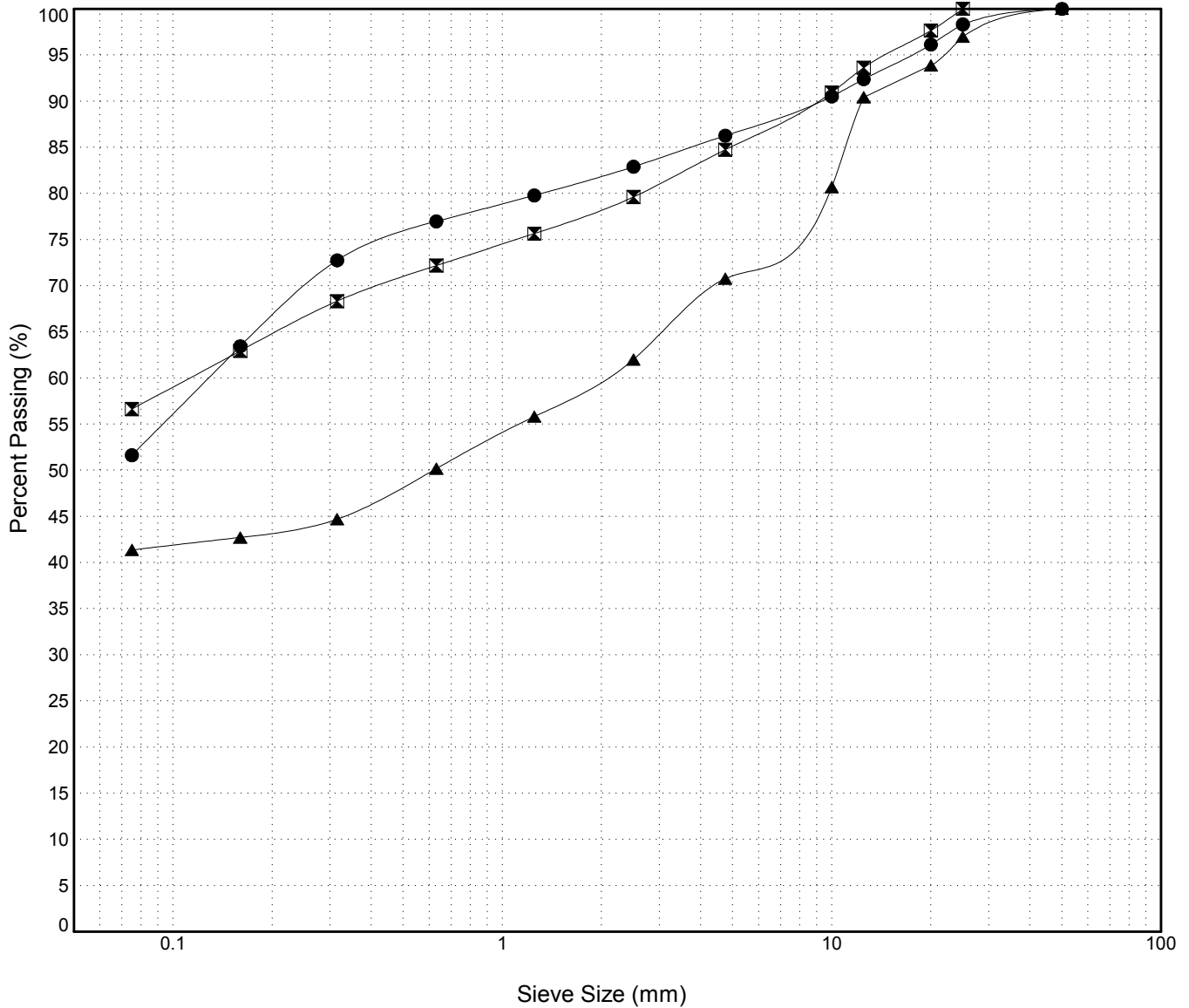
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4939
Midnight Sun Drilling	km 372.3	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7365249.6m E423958.9m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 60a	354	1.6 to 1.9	SANDY ORGANIC SILT(OL)	36.6	NP	NP	NP		
☒ 62	356	3.4 to 3.6	SANDY SILT with GRAVEL(ML)	29.7	NP	NP	NP		
▲ 63	357	4.6 to 4.8	SILTY SAND with GRAVEL(SM)	22.4	NP	NP	NP		

Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
																Gravel	Sand	Silt	Clay
● 60a	354	100.0	100.0	100.0	98.3	96.1	92.4	90.5	86.3	82.9	79.8	77.0	72.8	63.4	51.6	13.7	34.6	51.6	
☒ 62	356	100.0	100.0	100.0	100.0	97.7	93.6	90.9	84.7	79.6	75.6	72.2	68.3	62.9	56.6	15.3	28.1	56.6	
▲ 63	357	100.0	100.0	100.0	97.0	93.9	90.4	80.7	70.8	62.0	55.8	50.2	44.7	42.7	41.4	29.2	29.4	41.4	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

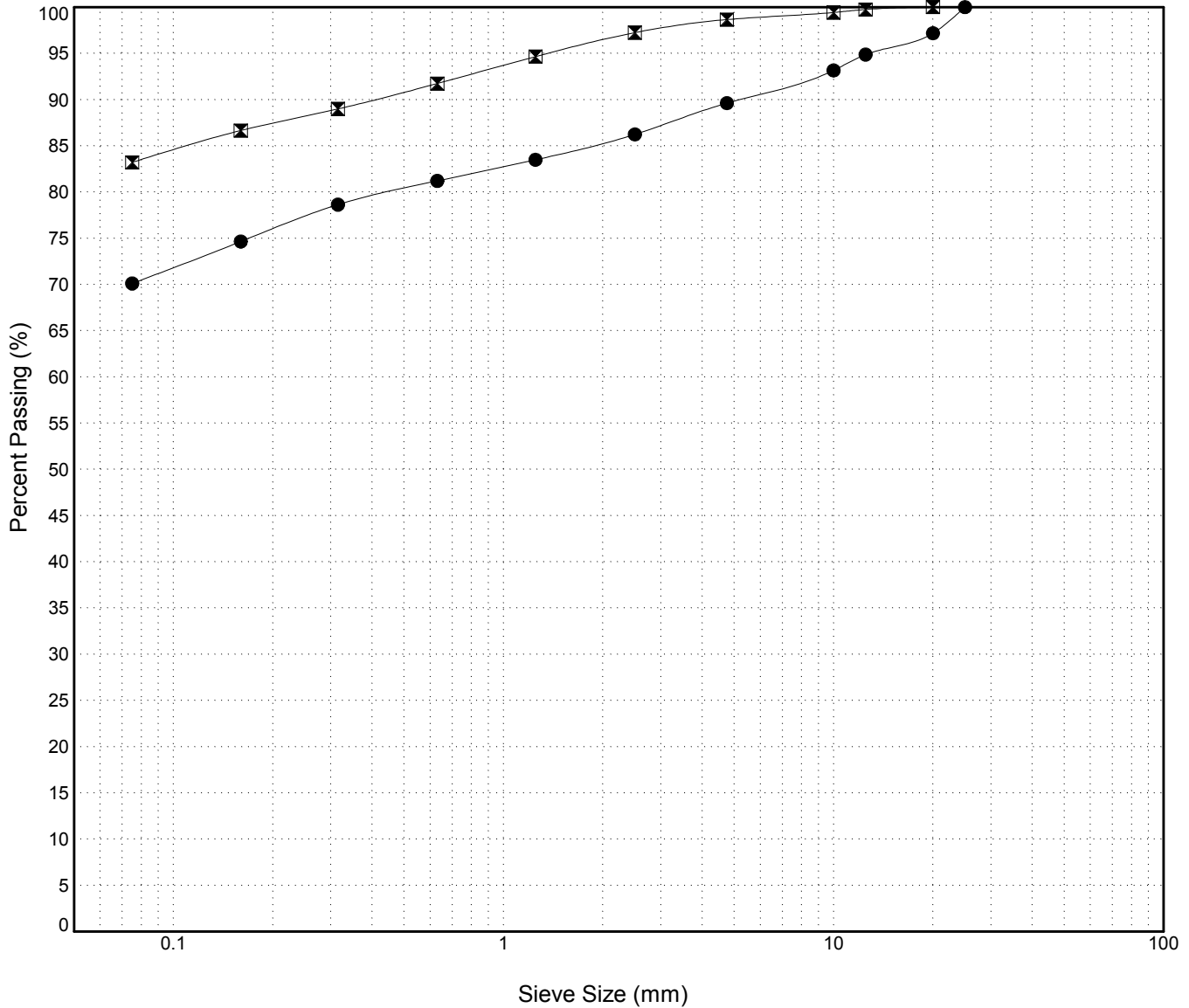


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 840A-4940
Midnight Sun Drilling	km 367.2	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7360768m E422398.3m	ELEVATION: 774.5m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu											
● 64	358	1.8 to 2.2	ORGANIC SILT with SAND(OL)	31.2	NP	NP	NP													
☒ 65	359	3.0 to 3.4	SILT with SAND(ML)	16.6	NP	NP	NP													
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown				
● 64	358	100.0	100.0	100.0	100.0	97.2	94.9	93.2	89.6	86.2	83.5	81.2	78.6	74.6	70.1	Gravel	Sand	Silt	Clay	
☒ 65	359	100.0	100.0	100.0	100.0	100.0	99.7	99.4	98.7	97.2	94.7	91.7	89.0	86.7	83.2	10.4	19.5	70.1		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



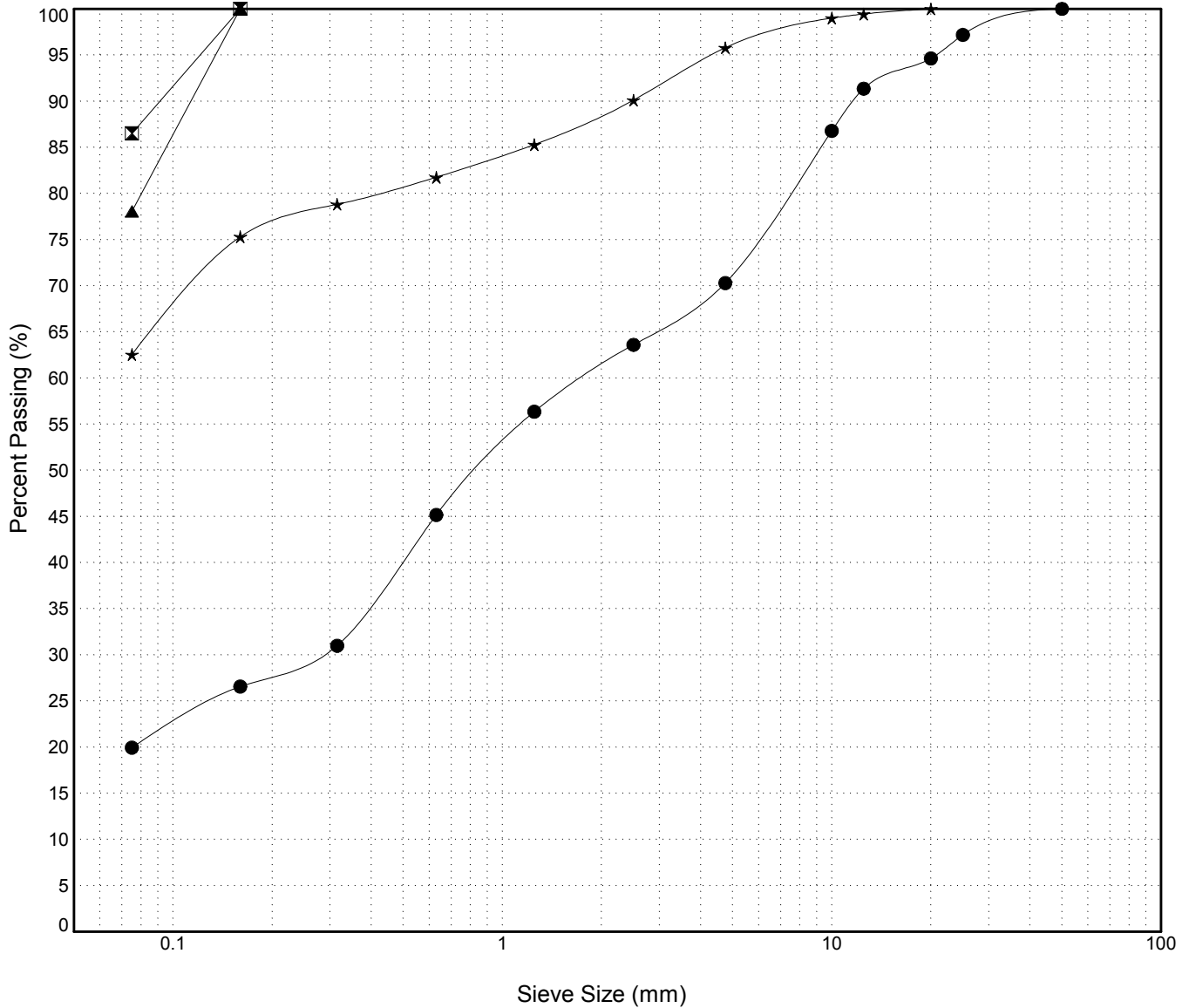
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4928
Midnight Sun Drilling	km 440.0	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7416986m E441312m	ELEVATION: 552.5m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 19	313	0.4 to 0.6	SILTY SAND with GRAVEL(SM)	8.7	NP	NP	NP		
☒ 21	315	2.3 to 2.6	ORGANIC SILT(OL)	55.9	NP	NP	NP		
▲ 22	316	3.4 to 3.7	ORGANIC SILT with SAND(OL)	139.6	NP	NP	NP		
★ 23	317	4.8 to 5.0	SANDY SILT(ML)	23.8	NP	NP	NP		

Field #	Lab #	%PASSING	Sieve Size (mm)														% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 19	313	100.0	100.0	100.0	100.0	97.2	94.6	91.4	86.8	70.3	63.6	56.3	45.2	31.0	26.6	19.9	29.7	50.3	19.9	
☒ 21	315	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	86.5	0.0	13.5	86.5	
▲ 22	316	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	78.1	0.0	21.9	78.1	
★ 23	317	100.0	100.0	100.0	100.0	100.0	99.4	99.0	95.8	90.1	85.3	81.8	78.8	75.3	62.5	4.2	33.2	62.5		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

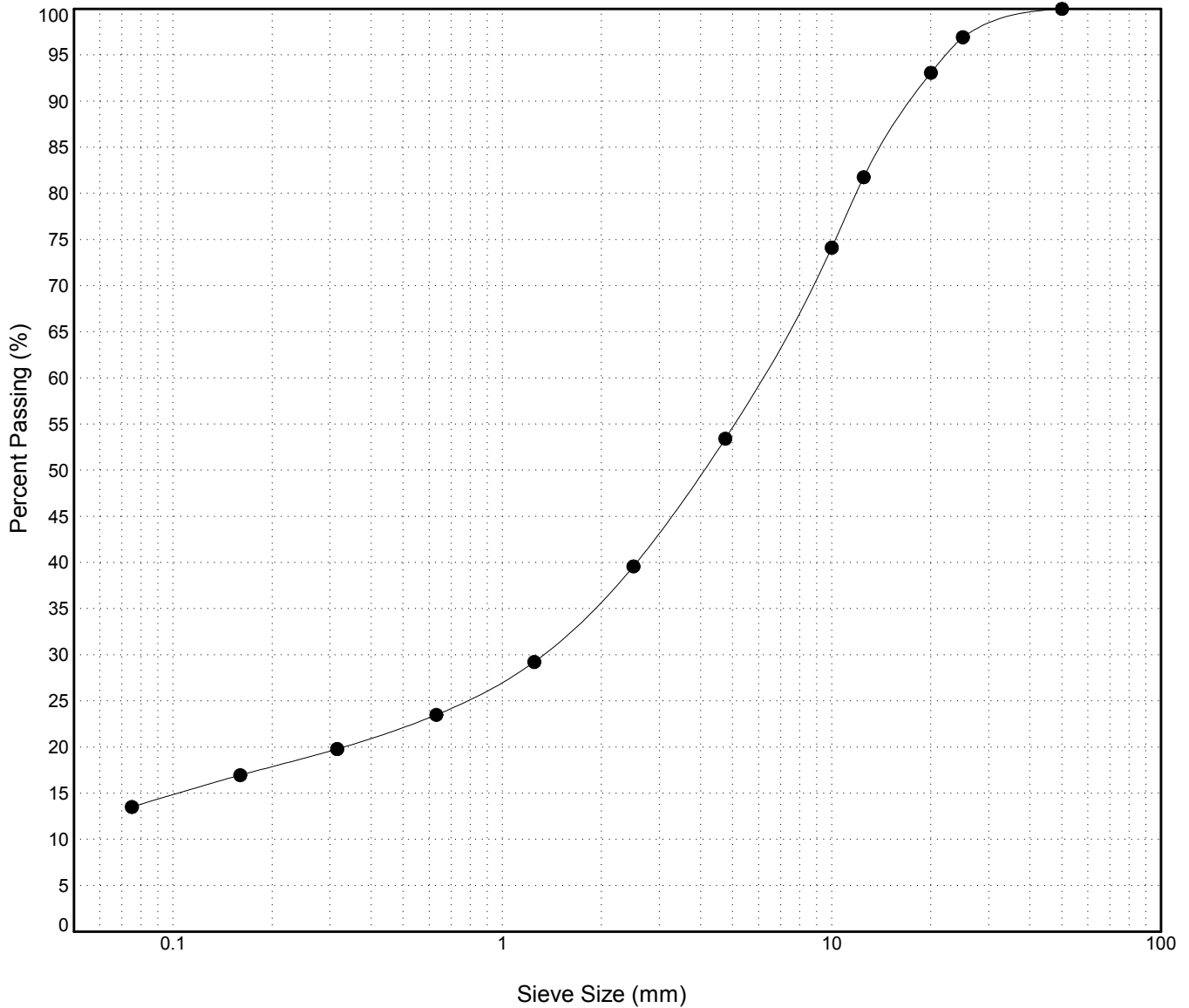


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4929
Midnight Sun Drilling	km 414.9	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7392454m E441367m	ELEVATION: 652.1m

Master Revised July 2013

Field #	Lab #	Depth	Classification											%H2O	LL	PL	PI	Cc	Cu	
● 24	318	2.2 to 2.6	SILTY GRAVEL with SAND(GM)											9.0	NP	NP	NP			
Field #	Lab #		100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
● 24	318	% PASSING	100.0	100.0	100.0	96.9	93.1	81.8	74.1	53.4	39.6	29.2	23.5	19.8	17.0	13.5	Gravel	Sand	Silt	Clay
																	46.6	39.9	13.5	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



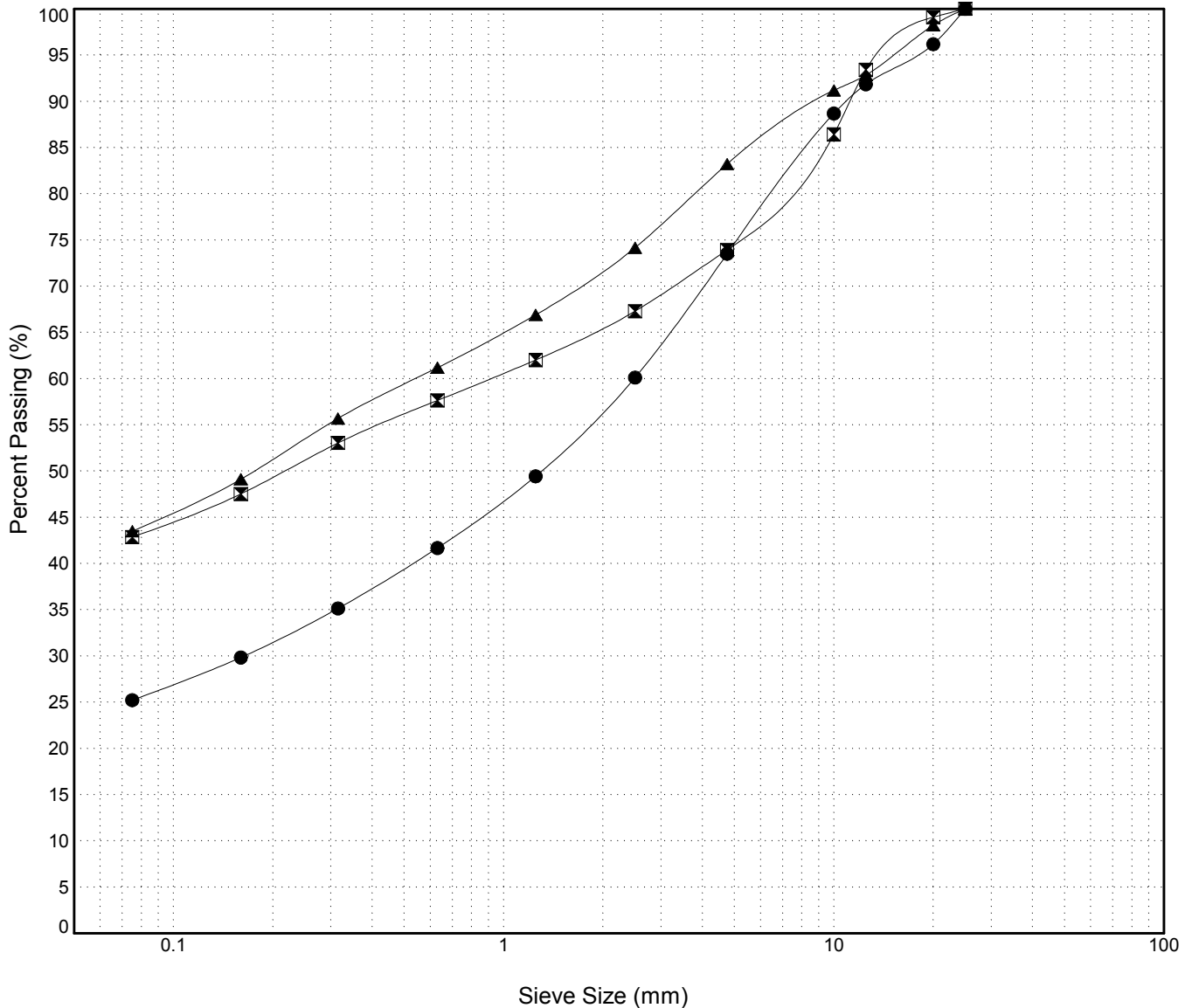
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4930
Midnight Sun Drilling	km 453.3	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7426623m E446165.6m	ELEVATION: 622.9m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 26	320	0.7 to 1.0	SILTY SAND with GRAVEL(SM)	14.0	NP	NP	NP		
☒ 27	321	1.2 to 1.4	SILTY SAND with GRAVEL(SM)	45.5	NP	NP	NP		
▲ 28	322	2.0 to 2.3	SILTY SAND with GRAVEL(SM)	88.9	NP	NP	NP		

Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
		% PASSING														Gravel	Sand	Silt	Clay
● 26	320	100.0	100.0	100.0	100.0	96.2	91.8	88.7	73.5	60.1	49.4	41.7	35.1	29.8	25.2	26.5	48.3	25.2	
☒ 27	321	100.0	100.0	100.0	100.0	99.1	93.4	86.4	73.9	67.3	62.0	57.6	53.0	47.5	42.9	26.1	31.1	42.9	
▲ 28	322	100.0	100.0	100.0	100.0	98.2	92.8	91.2	83.2	74.2	66.9	61.2	55.7	49.1	43.5	16.8	39.7	43.5	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



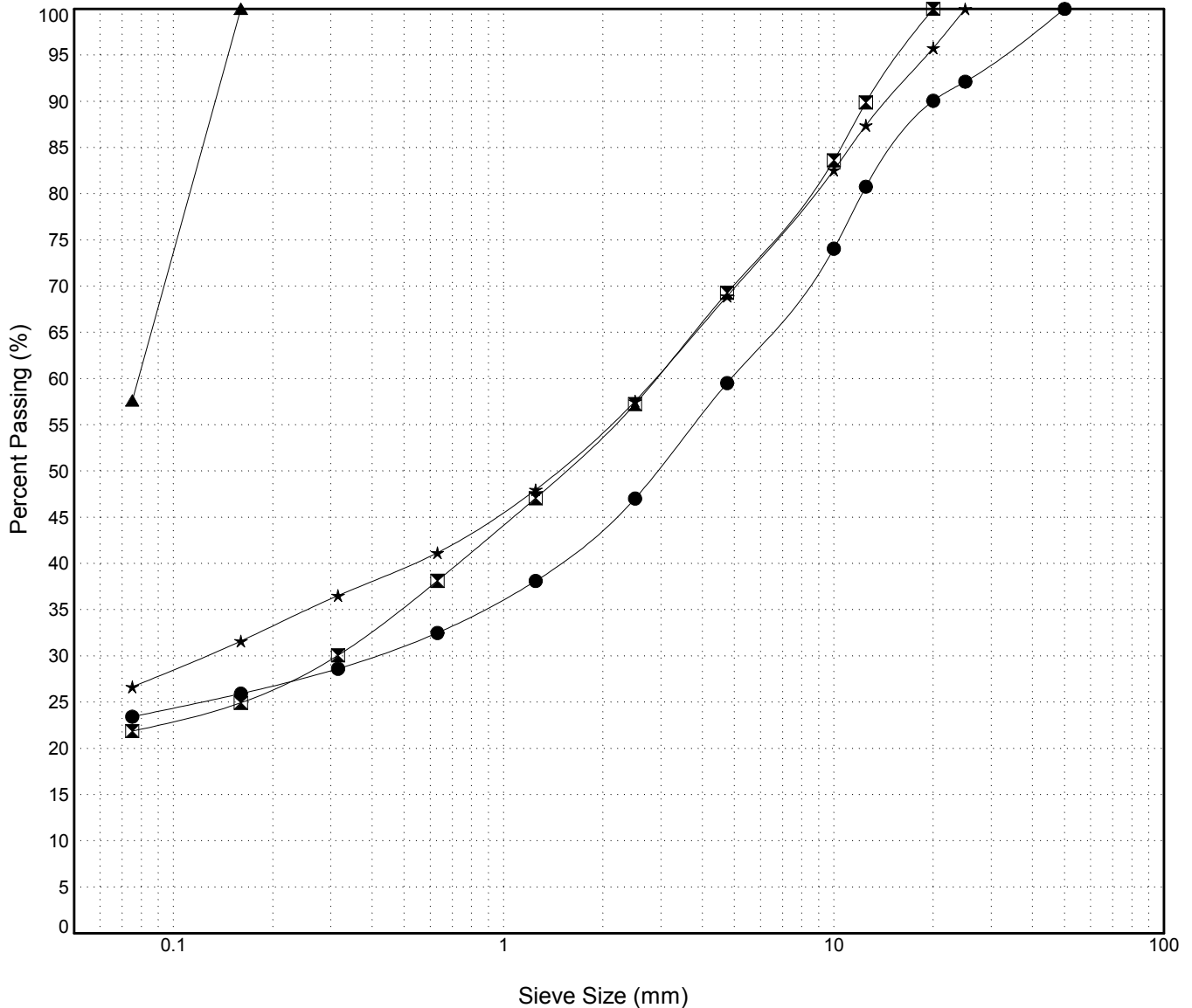
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4931
Midnight Sun Drilling	km 459.3	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7432350m E447033.4m	ELEVATION: 747.6m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 29	323	1.6 to 1.8	SILTY GRAVEL with SAND(GM)	22.4	NP	NP	NP		
☒ 30	324	2.4 to 2.6	SILTY SAND with GRAVEL(SM)	35.5	NP	NP	NP		
▲ 31	325	3.0 to 3.2	SANDY SILT(ML)	127.8	NP	NP	NP		
★ 32	326	3.4 to 3.6	SILTY SAND with GRAVEL(SM)	42.5	NP	NP	NP		

Field #	Lab #	% PASSING	Sieve Size (mm)													% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt
● 29	323	100.0	100.0	100.0	100.0	92.1	90.1	80.8	74.1	59.5	47.0	38.1	32.5	28.6	25.9	23.4	40.5	36.1	23.4
☒ 30	324	100.0	100.0	100.0	100.0	100.0	89.9	83.6	69.3	57.3	47.1	38.1	30.1	24.9	21.9	30.7	47.4	21.9	
▲ 31	325	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	57.6	0.0	42.4	57.6	
★ 32	326	100.0	100.0	100.0	100.0	95.8	87.4	82.6	68.9	57.6	48.0	41.2	36.5	31.6	26.7	31.1	42.3	26.7	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

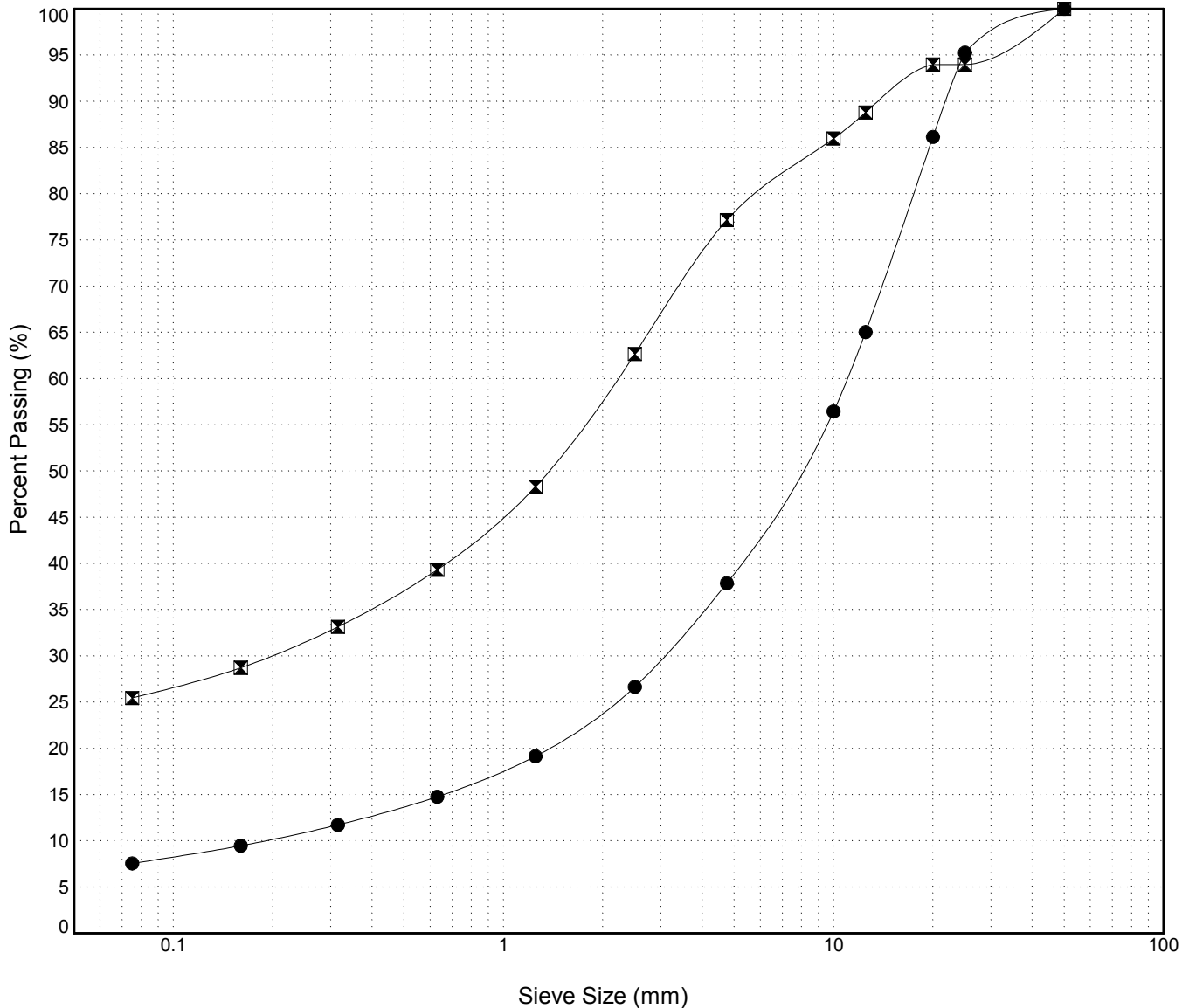


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4932
Midnight Sun Drilling	km 421.3	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7398620m E440033.7m	ELEVATION: 656.1m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu											
● 33	327	0.8 to 1.1	POORLY GRADED GRAVEL with SILT and SAND(GP-GM)	4.4	NP	NP	NP	4.5	58.6											
☒ 34	328	2.0 to 2.2	SILTY SAND with GRAVEL(SM)	30.8	NP	NP	NP													
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown				
● 33	327	100.0	100.0	100.0	95.3	86.2	65.0	56.5	37.9	26.7	19.2	14.8	11.7	9.5	7.6	Gravel	Sand	Silt	Clay	
☒ 34	328	100.0	100.0	100.0	94.0	94.0	88.8	86.0	77.2	62.7	48.3	39.3	33.2	28.7	25.4	22.8	51.7	25.4		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



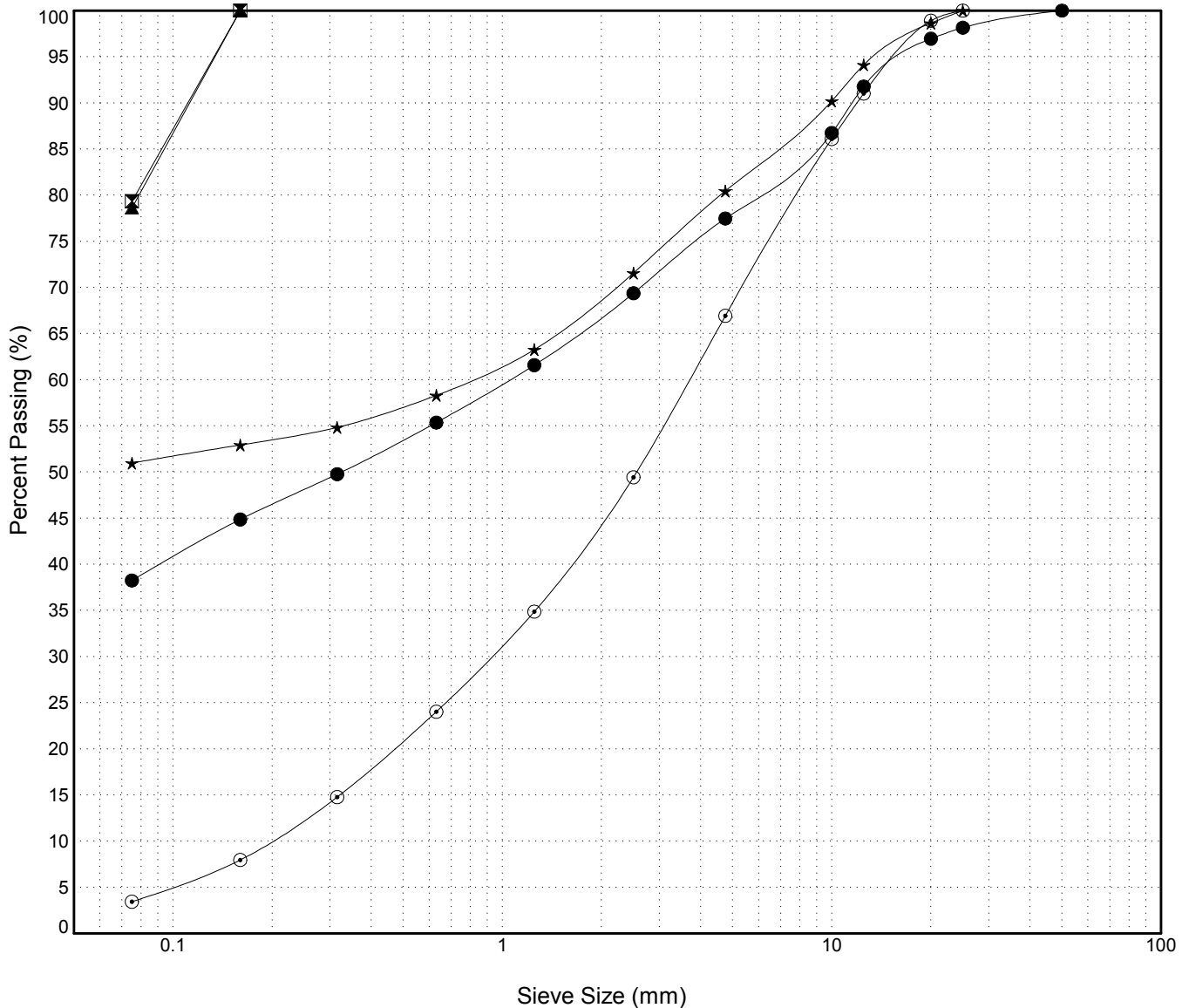
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4941
Midnight Sun Drilling	km 351.9 LHS	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7349473m E417921m	ELEVATION: 748.3m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 66	360	1.8 to 2.1	SILTY SAND with GRAVEL(SM)	10.6	NP	NP	NP		
☒ 67	361	3.0 to 3.3	ORGANIC SILT with SAND(OL)	64.8	NP	NP	NP		
▲ 68a	362	3.8 to 4.1	SILT with SAND(ML)	29.8	NP	NP	NP		
★ 68	363	4.6 to 4.8	SANDY SILT with GRAVEL(ML)	21.5	NP	NP	NP		
⊙ 69	364	6.2 to 6.4	WELL-GRADED SAND with GRAVEL(SW)	8.8	NP	NP	NP	1.2	18.8

Field #	Lab #	% PASSING													% Breakdown				
		100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 66	360	100.0	100.0	100.0	98.2	97.0	91.8	86.7	77.5	69.4	61.6	55.4	49.8	44.9	38.2	22.5	39.2	38.2	
☒ 67	361	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	79.3	0.0	20.7	79.3	
▲ 68a	362	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	78.6	0.0	21.4	78.6	
★ 68	363	100.0	100.0	100.0	100.0	98.6	94.1	90.2	80.5	71.6	63.3	58.3	54.8	52.9	51.0	19.5	29.5	51.0	
⊙ 69	364	100.0	100.0	100.0	100.0	98.9	91.0	86.1	66.9	49.4	34.9	24.0	14.8	8.0	3.4	33.1	63.5	3.4	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



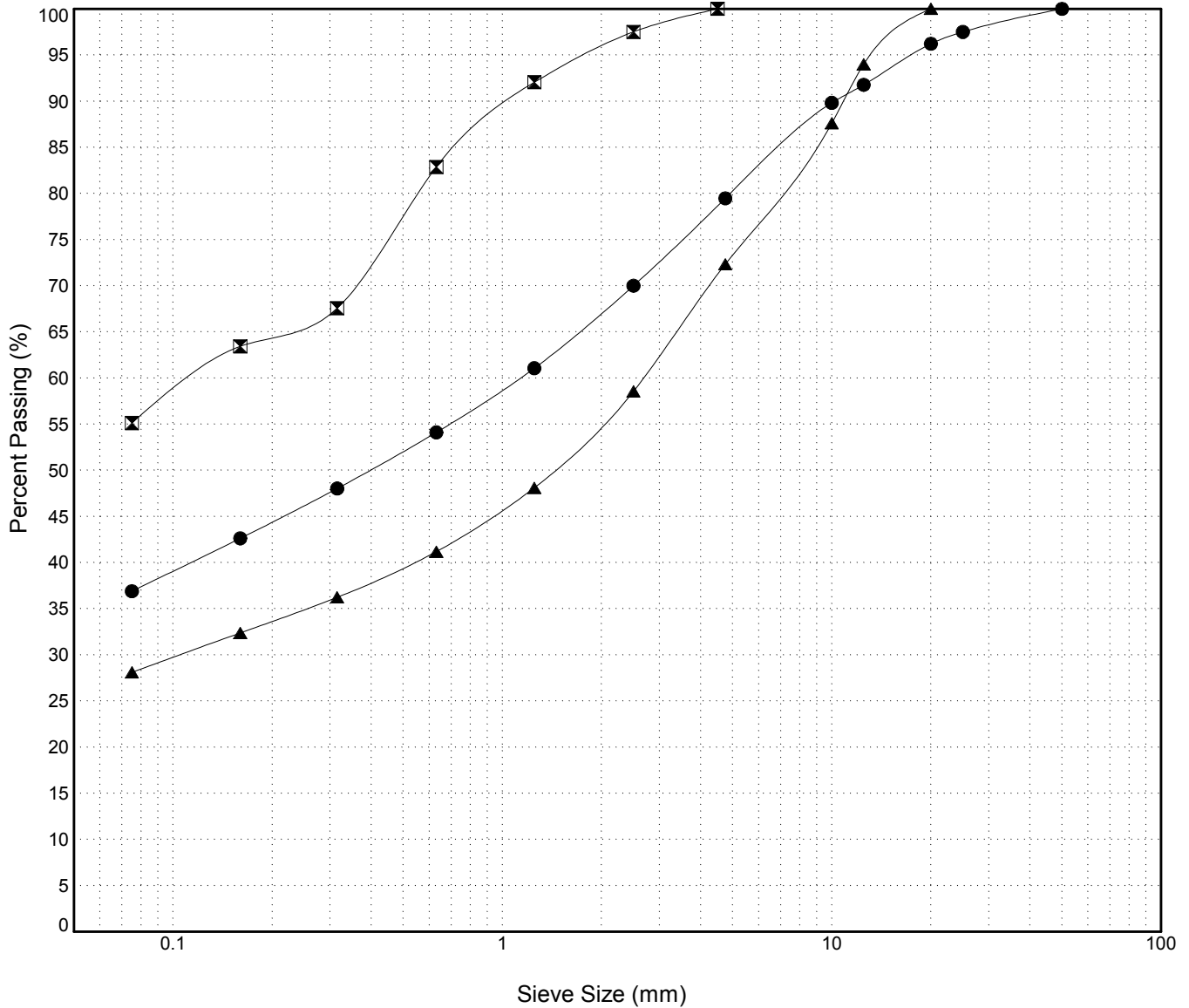
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4942
Midnight Sun Drilling	km 351.6	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z8W N7349353m E417725.1m	ELEVATION: 748.3m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 70	365	1.8 to 2.0	SILTY SAND with GRAVEL(SM)	13.5	NP	NP	NP		
☒ 72	367	5.0 to 5.2	SANDY SILT(ML)	44.7	NP	NP	NP		
▲ 74	369	6.2 to 6.6	SILTY SAND with GRAVEL(SM)	32.1	NP	NP	NP		

Field #	Lab #	% PASSING	Sieve Size (mm)													% Breakdown				
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 70	365	100.0	100.0	100.0	100.0	97.5	96.2	91.8	89.8	79.5	70.0	61.1	54.1	48.0	42.6	36.9	20.5	42.6	36.9	
☒ 72	367	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.5	92.0	82.9	67.6	63.4	55.1	0.0	44.9	55.1		
▲ 74	369	100.0	100.0	100.0	100.0	100.0	94.0	87.6	72.3	58.5	48.1	41.2	36.2	32.4	28.1	27.7	44.2	28.1		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

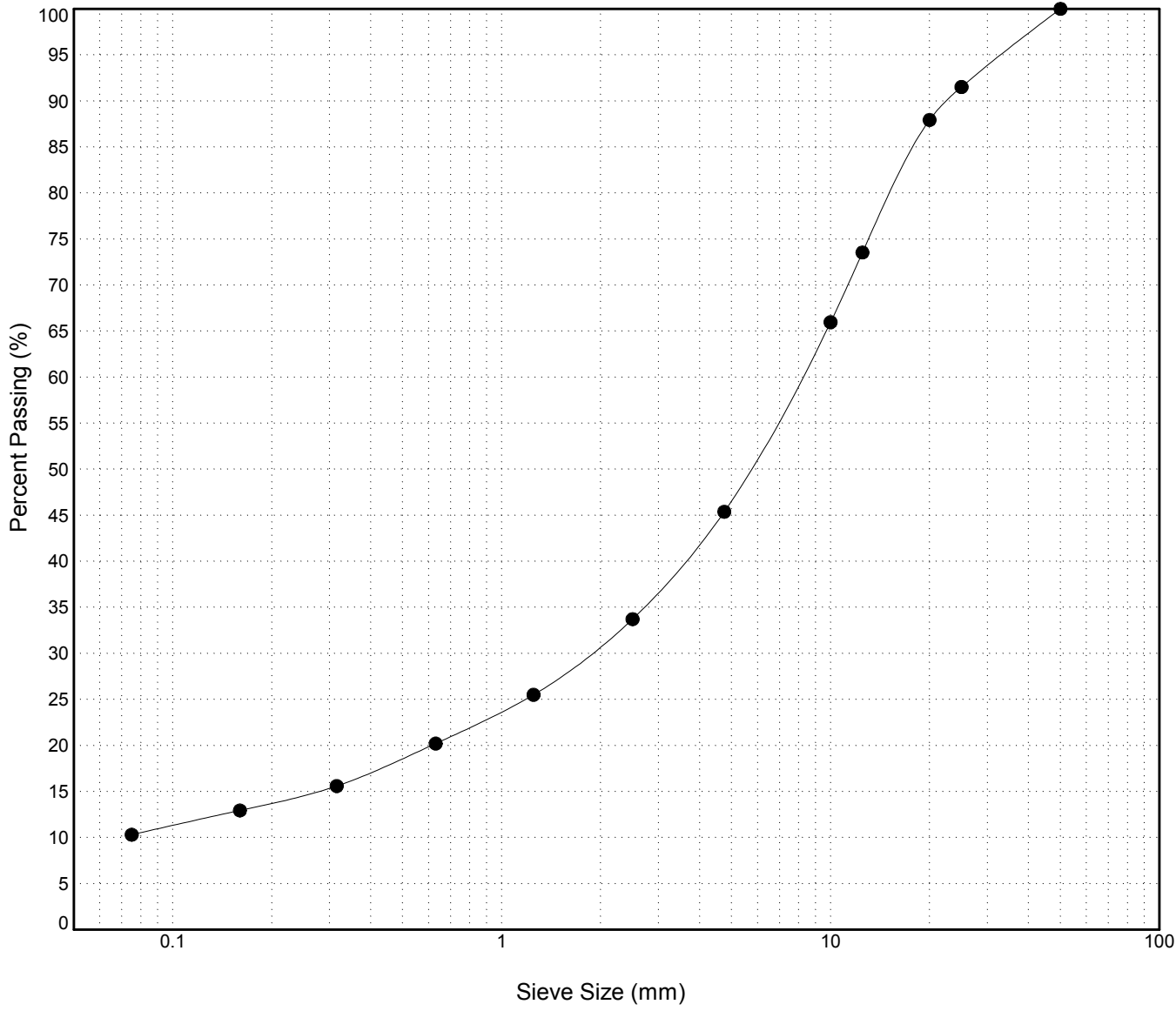


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4943
Midnight Sun Drilling	km 245.0 S	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7291512m E362900.2m	ELEVATION: 550.4m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H ₂ O	LL	PL	PI	C _c	C _u											
● 75	370	0.4 to 0.7	POORLY GRADED GRAVEL with SILT and SAND(GP-GM)	3.8	NP	NP	NP	6.0	117.4											
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown				
● 75	370	100.0	100.0	100.0	91.5	87.9	73.5	66.0	45.4	33.7	25.5	20.2	15.6	12.9	10.3	Gravel	Sand	Silt	Clay	
																54.6	35.1	10.3		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



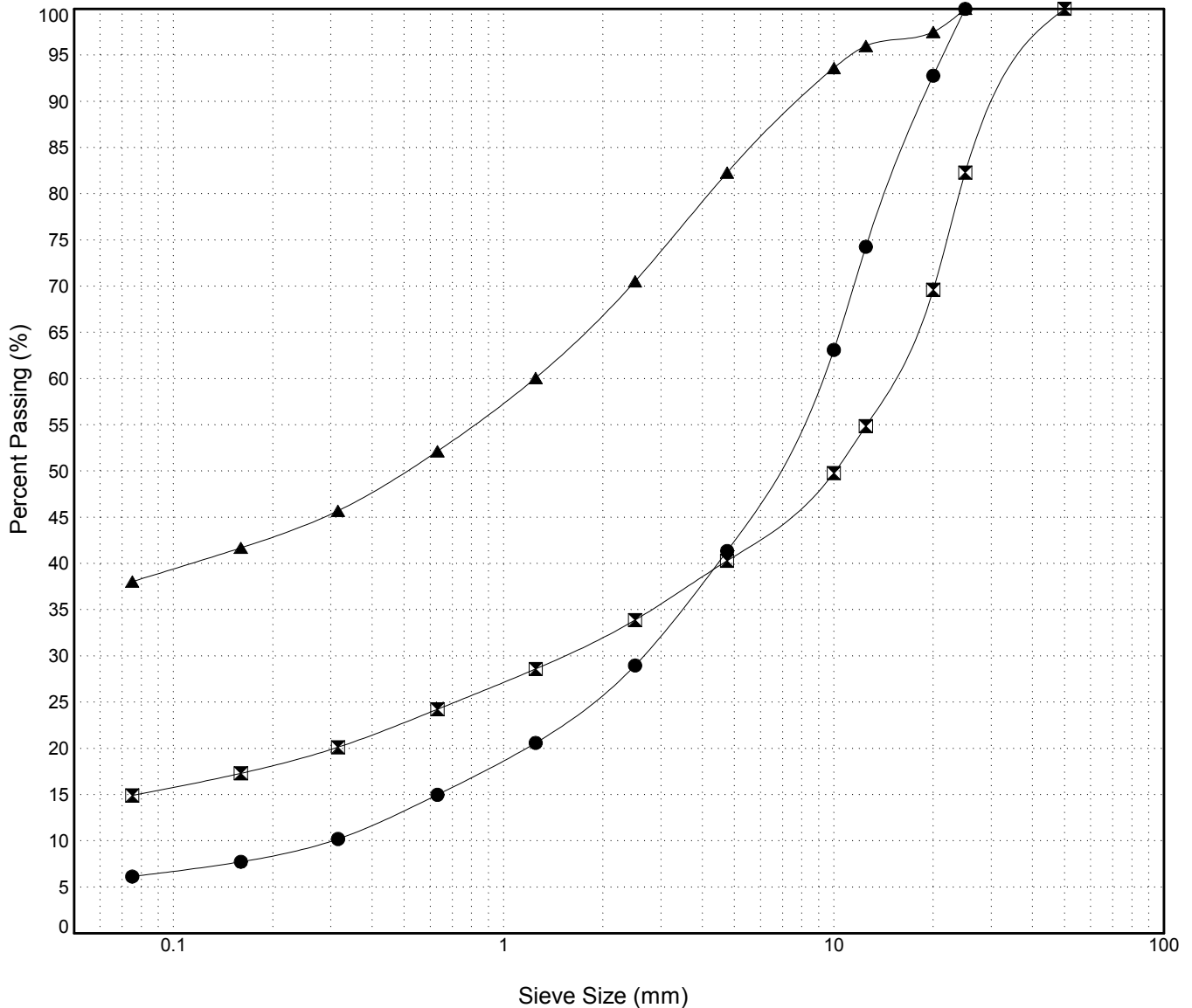
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4944
Midnight Sun Drilling	km 245.0 N	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7291518m E362918.7m	ELEVATION: 551.7m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 80	375	0.4 to 0.6	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	3.1	NP	NP	NP	2.6	30.2
☒ 81	376	2.8 to 3.2	SILTY GRAVEL with SAND(GM)	6.6	NP	NP	NP		
▲ 83	378	5.8 to 6.2	SILTY SAND with GRAVEL(SM)	15.0	NP	NP	NP		

Field #	Lab #	% PASSING	Sieve Size (mm)													% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt
● 80	375	100.0	100.0	100.0	100.0	92.8	74.3	63.1	41.4	29.0	20.6	15.0	10.2	7.7	6.1	58.6	35.2	6.1	
☒ 81	376	100.0	100.0	100.0	82.3	69.6	54.9	49.8	40.3	33.9	28.6	24.2	20.1	17.3	14.9	59.7	25.4	14.9	
▲ 83	378	100.0	100.0	100.0	100.0	97.5	96.0	93.6	82.3	70.5	60.1	52.1	45.7	41.7	38.0	17.7	44.2	38.0	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



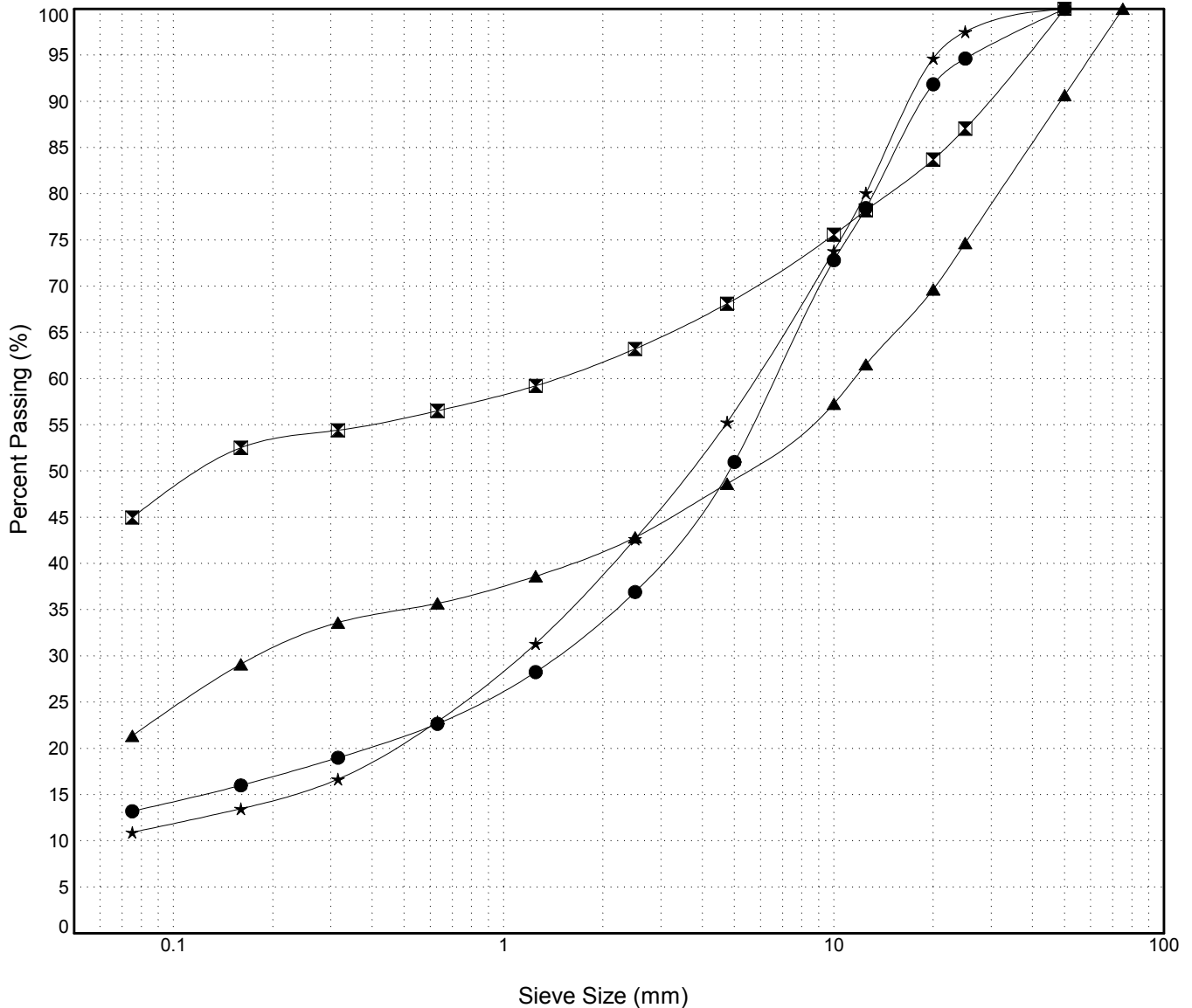
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4945
Midnight Sun Drilling	km 237.0 LHS	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7286568m E632290m	ELEVATION: 509m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 84	379	0.4 to 0.6	SILTY GRAVEL with SAND(GM)	2.9	NP	NP	NP		
☒ 85	380	0.8 to 1.0	SILTY GRAVEL with SAND(GM)	18.5	NP	NP	NP		
▲ 86	381	1.6 to 1.9	SILTY GRAVEL with SAND(GM)	11.3	NP	NP	NP		
★ 87	382	3.2 to 3.6	POORLY GRADED GRAVEL with SILT and SAND(GP-GM)	12.1	NP	NP	NP	3.8	100.3

Field #	Lab #	% PASSING	Sieve Size (mm)													% Breakdown				
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 84	379	100.0	100.0	100.0	100.0	94.6	91.8	78.4	72.8	49.9	36.9	28.3	22.7	19.0	16.0	13.2	50.1	36.7	13.2	
☒ 85	380	100.0	100.0	100.0	87.1	83.7	78.2	75.6	68.1	63.2	59.2	56.5	54.4	52.5	45.0		31.9	23.2	45.0	
▲ 86	381	100.0	100.0	90.7	74.7	69.7	61.5	57.3	48.6	42.8	38.6	35.7	33.6	29.1	21.4		51.4	27.3	21.4	
★ 87	382	100.0	100.0	100.0	97.5	94.7	80.1	73.8	55.3	42.7	31.3	22.9	16.7	13.5	10.9		44.7	44.4	10.9	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

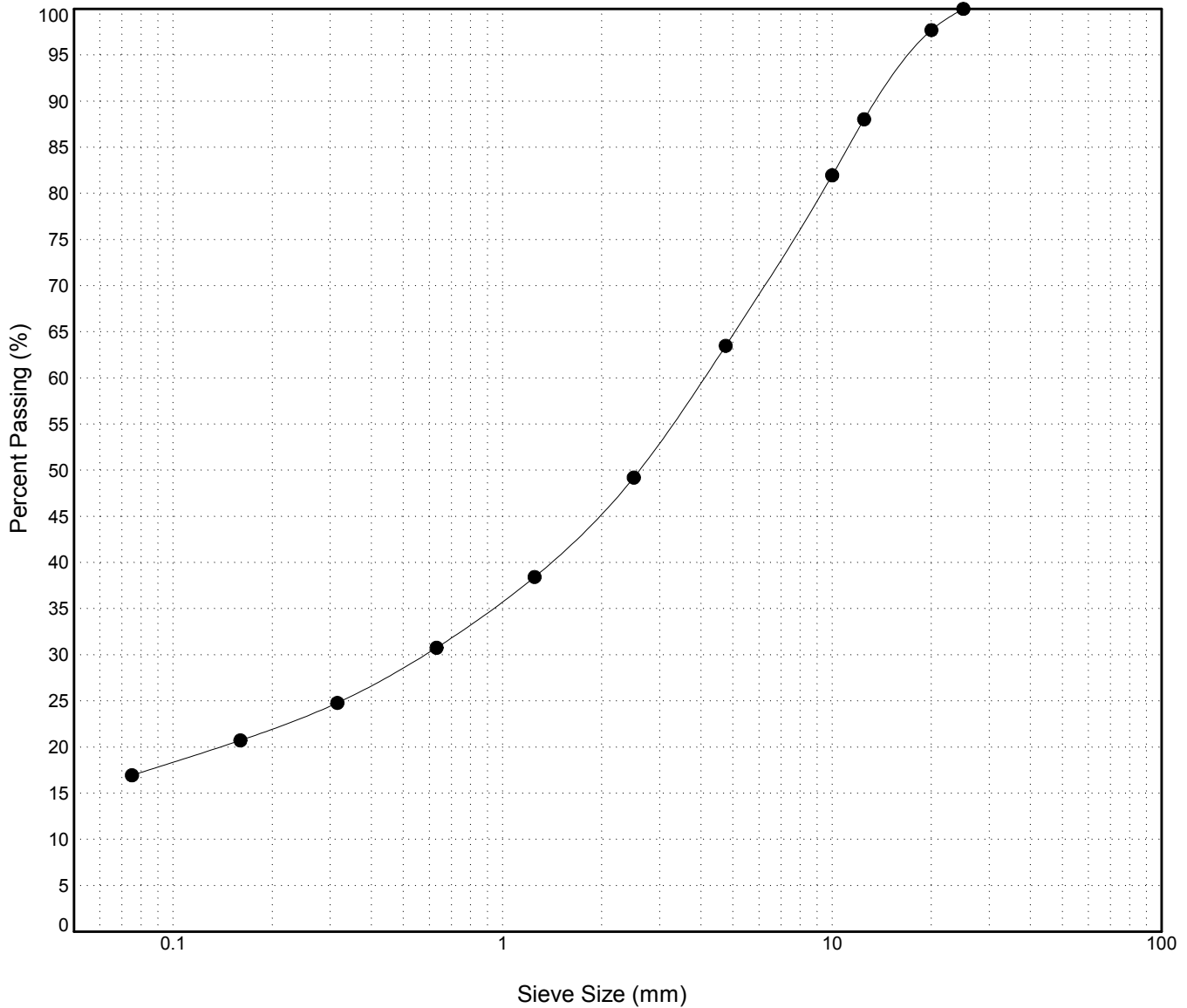


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4946
Midnight Sun Drilling	km 237.0 LHS	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7286576m E632299.2m	ELEVATION: 511.4m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H ₂ O	LL	PL	PI	C _c	C _u										
● 89	384	5.0 to 5.2	SILTY SAND with GRAVEL(SM)	15.1	NP	NP	NP												
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
● 89	384	100.0	100.0	100.0	100.0	97.7	88.0	82.0	63.5	49.2	38.4	30.8	24.8	20.7	16.9	Gravel	Sand	Silt	Clay
																36.5	46.5	16.9	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



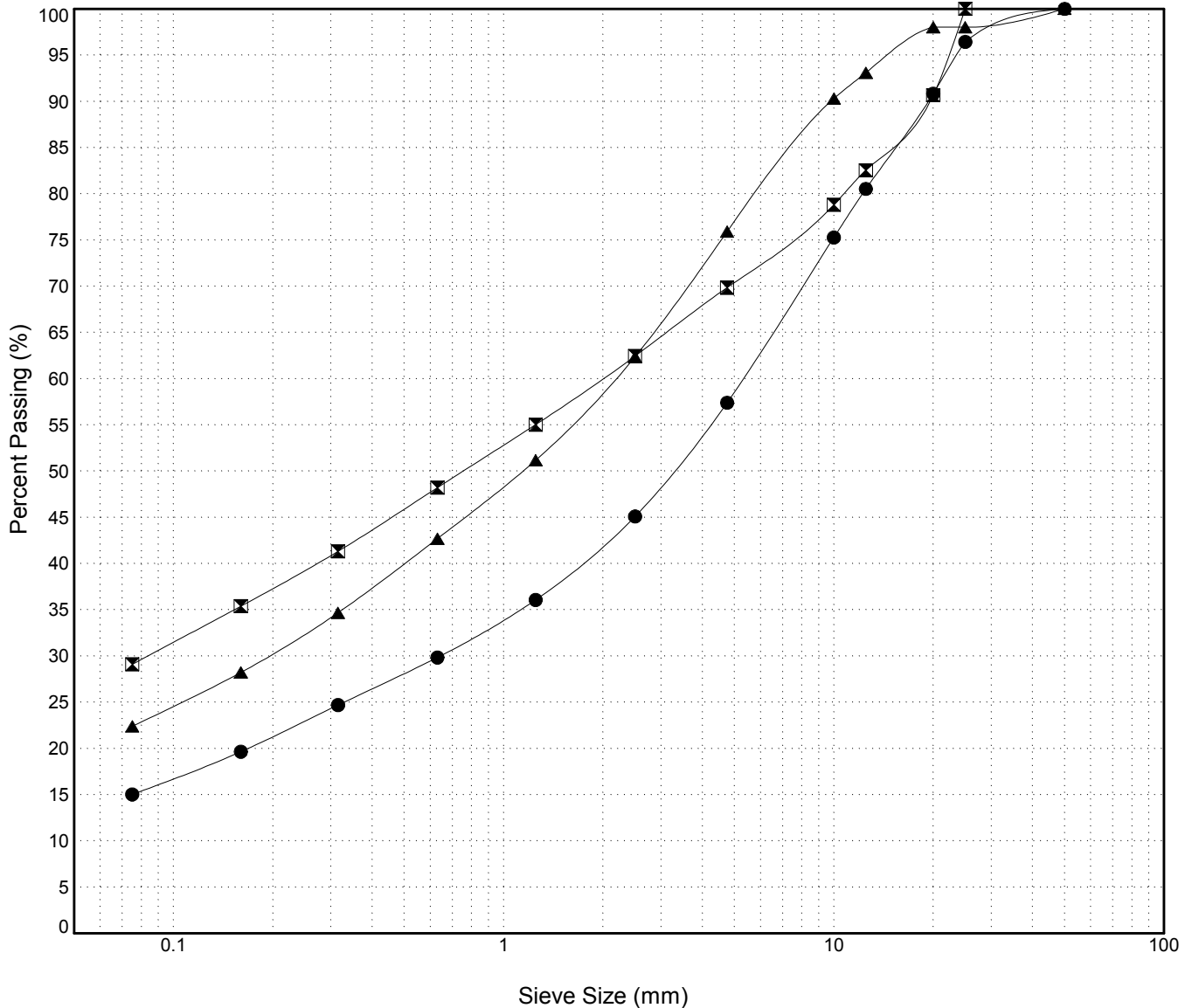
GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4947
Midnight Sun Drilling	129.0 S	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7205055m E628838.6m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 90	385	0.4 to 0.8	SILTY GRAVEL with SAND(GM)	3.6	NP	NP	NP		
☒ 92	387	2.8 to 3.0	SILTY SAND with GRAVEL(SM)	34.0	NP	NP	NP		
▲ 94	389	4.6 to 5.0	SILTY SAND with GRAVEL(SM)	12.5	NP	NP	NP		

Field #	Lab #	%PASSING														% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt
● 90	385	100.0	100.0	100.0	100.0	96.4	90.8	80.5	75.3	57.4	45.1	36.1	29.8	24.7	19.6	15.0	42.6	42.4	15.0
☒ 92	387	100.0	100.0	100.0	100.0	90.7	82.5	78.8	69.8	62.4	55.0	48.2	41.3	35.4	29.1	30.2	40.7	29.1	
▲ 94	389	100.0	100.0	100.0	98.0	98.0	93.1	90.3	75.9	62.4	51.2	42.7	34.7	28.2	22.4	24.1	53.5	22.4	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

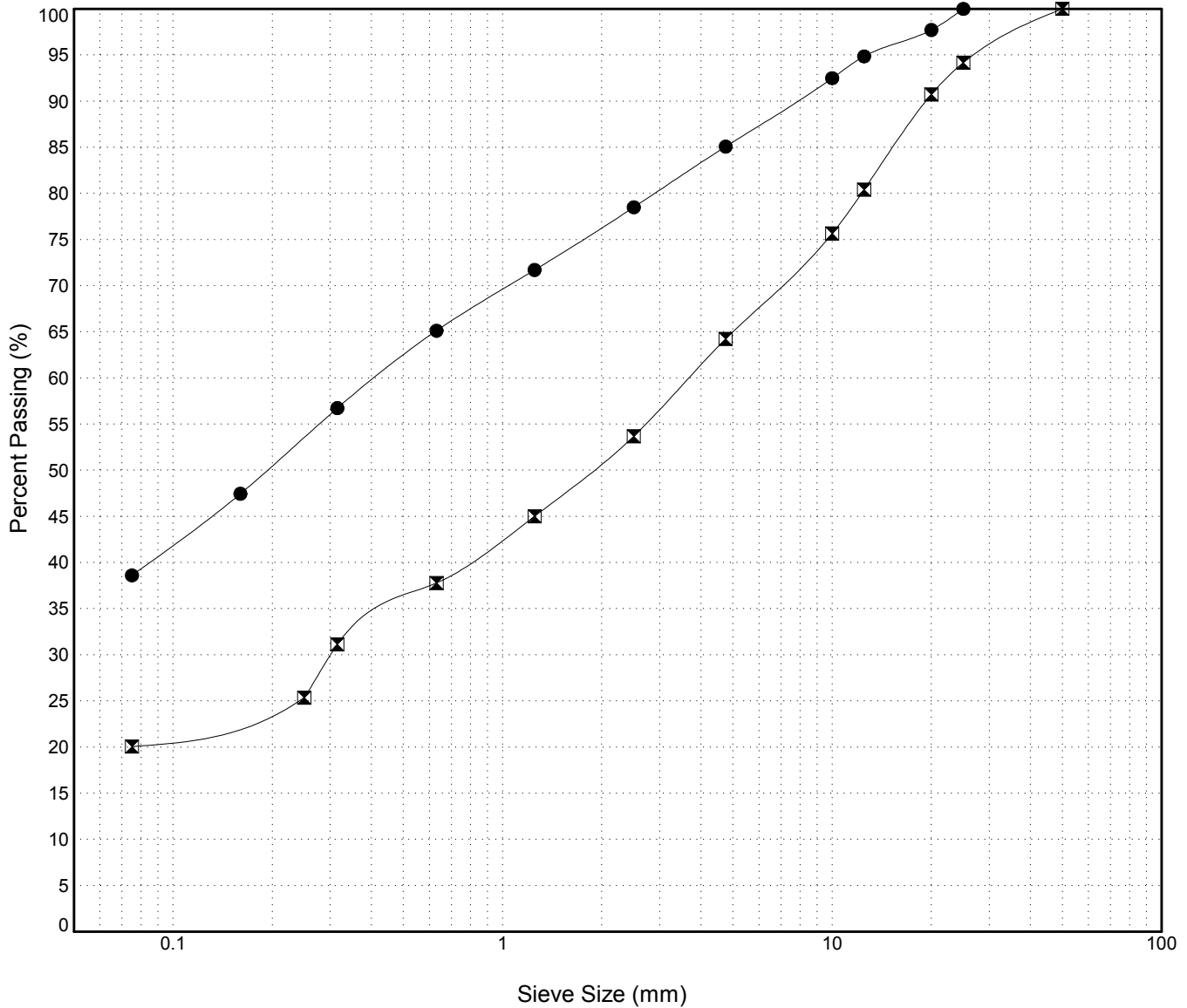


GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4948
Midnight Sun Drilling	129.0 N	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7205059m E628834.4m	ELEVATION: 935.7m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu										
● 95	390	2.2 to 2.4	SILTY SAND(SM)	29.6	NP	NP	NP												
☒ 97	392	3.8 to 4.0	SILTY SAND with GRAVEL(SM)	14.2	NP	NP	NP												
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
● 95	390	100.0	100.0	100.0	100.0	97.7	94.9	92.5	85.1	78.5	71.7	65.1	56.7	47.5	38.6	Gravel	Sand	Silt	Clay
☒ 97	392	100.0	100.0	100.0	94.2	90.7	80.4	75.7	64.2	53.7	45.0	37.8	31.1	23.4	20.1	35.8	44.2	20.1	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



GRAIN SIZE ANALYSIS	Geotech Permafrost Drilling	SOURCE/TP#: 841-4949
Midnight Sun Drilling	km 82.2 RHS	PROJECT NO: 552-202105-0104-1-4
MARL M4CT	Coordinates:Z7W N7165155m E630318.2m	ELEVATION: 1297.4m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 098	393	0.4 to 0.6	SILTY SAND with GRAVEL(SM)	6.2	NP	NP	NP		
☒ 100	395	3.0 to 3.2	SILTY SAND with GRAVEL(SM)	6.0	NP	NP	NP		
▲ 101	396	5.0 to 5.2	SILTY SAND with GRAVEL(SM)	8.1	NP	NP	NP		
★ 102	397	6.6 to 6.8	SILTY SAND with GRAVEL(SM)	10.1	NP	NP	NP		

Field #	Lab #	% PASSING	Sieve Size (mm)													% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt
● 098	393	100.0	100.0	100.0	100.0	95.9	91.3	81.7	76.4	65.7	57.4	48.8	42.0	35.7	30.8	26.7	34.3	39.0	26.7
☒ 100	395	100.0	100.0	100.0	95.3	93.2	84.1	79.9	68.8	58.1	47.7	39.8	32.8	27.5	23.4	21.6	31.2	45.4	23.4
▲ 101	396	100.0	100.0	100.0	100.0	97.4	90.4	87.5	74.4	63.3	52.6	44.3	37.0	31.3	26.6	21.6	25.6	47.8	26.6
★ 102	397	100.0	100.0	100.0	100.0	97.3	91.6	88.1	71.3	58.6	47.8	39.4	31.9	26.1	21.6	21.6	28.7	49.7	21.6

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse

