

# 2012 Additional Soil Characterization Data



#### Former Mine Openings Adit Portal Shaft Collar Stope Surface Opening ♣ Spring/Seep Location

2012 Soil Boring Locations

Approximate Extent of Surface Mining

Proposed Sampling Area

Topographic Contour (2 ft. interval)

## Topographic Contour (10 ft. interval)

# **RED DEVIL MINE**

Red Devil, Alaska

# Figure E-1

Soil Boring Locations, Additional Soil Characterization, September 2012



Source: Malone 1962 and MacKevett and Berg 1963 Image Source: Aero-Metric, Inc. 2010a

Topographic elevation contours source: Aero-Metric, Inc. 2010b, based on Aero-Metric, Inc. aerial photograph dated 5/29/2001

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Result (p	pm)						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Arsenic	Mercury	Antimony	Barium	Cadmium	Calcium	Cesium	Chromium
12SM51SB	Dgs)		Organic mat (disturbed)	Organic mat (disturbed)									<b>/</b> /	
12SM51SB	4-24		Medium gray gravelly silt with sand. Sand is very fine to medium grained. Gravel is angular to blocky to subblocky, 0.5-3cm, sandstone and siltstone. Silt is moist, soft to firm, no plasticity, occasional organics, occasional Fe-staining.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	52.05	< LOD	< LOD	644.84	< LOD	4225.86	< LOD	71.08
12SM51SB	24-48		Same as above, except less gravel and sand, low plasticity. Appears to be possible loess mixed with gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	55.35	< LOD	< LOD	561.74	< LOD	4889.05	< LOD	64.12
12SM51SB	48-72	12SM51SB06	Grading from above to light gray to brown gravely silt. Gravel is 0.5-4cm, angular to subrounded sandstone (orange brown) and siltstone. Silt is firm, low plasticity, occasional Fe- staining, occasional roots and organics. Refusal at 72" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.		80.14	< LOD	< LOD	572.54	< LOD	4983.11	< LOD	79.8
12SM52SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM52SB	4-24	12SM52SB02	Brown sandy silt. Sand is very fine grained. Silt is very sift, no plasticity, organic-rich, loamy.	Indeterminate. Possible loess. Abundant organic material.			< LOD	< LOD	< LOD	401.31	< LOD	4482.01	< LOD	38.55
12SM52SB	24-48		Same as above, except includes roots.	Indeterminate. Possible loess. Abundant organic material.			9.85	< LOD	< LOD	356.73	< LOD	5427.95	< LOD	76.92
12SM52SB	48-72		Light gray silt with sand. Sand is very fine grained. Silt is low to medium plasticity, low moisture, firm, root casts, Fe-staining.	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	< LOD	612.76	< LOD	5509.35	< LOD	79.69
12SM52SB	72-96		Same as above	Indeterminate. Possible loess.		Dry to moist	10.57	< LOD	< LOD	607.55	< LOD	6025.37	28.74	58.71
12SM52SB	96-120	12SM52SB10	Olive gray to dark gray with occasional brown mottling (Fe-staining) gravely silt with sand. Gravel is angular to subrounded, fine to 2cm sandstone and siltstone. Sand is fine grained. Silt is firm to stiff, low plasticity, moist. Possible grading of loess to KG Group soil.	Indeterminate. Possible mixed loess and KG soil.		Moist	12.49	< LOD	< LOD	520.88	< LOD	3974.16	< LOD	93.01
12SM52SB	120-132	12SM52SB11	Dark gray gravel with silt and sand. Sand is medium to coarse grained. Gravel is angular to blocky altered sandstone and siltstone, fine to 3cm, Fe-staining, occasional calcareous mineralization. Low moisture.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	1220.04	36.13	86.9	1200.98	< LOD	1012.59	58.77	< LOD
12SM53SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM53SB	4-24		Olive gray silt. Very soft. Very low moisture. No plasticity. Organic-rich. Roots. Loamy.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	< LOD	< LOD	< LOD	373.75	< LOD	5341.39	< LOD	< LOD
12SM53SB	24-48		Same as above, except slightly micaceous and less organics.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	< LOD	< LOD	< LOD	343.51	< LOD	4872.63	< LOD	39.82
12SM53SB	48-72		Medium gray to olive gray silt with trace sand. Sand is very fine grained. Silt is firm, occasional Fe-staining, low plasticity, low moisture.	Indeterminate. Possible loess.		Dry to moist	9.54	< LOD	< LOD	542.48	< LOD	4338.71	< LOD	62.98
12SM53SB	72-96		Same as above, except increased moisture.	Indeterminate. Possible loess.		Moist	12.56	< LOD	< LOD	531.5	< LOD	5181.65	< LOD	< LOD
12SM53SB	96-120	12SM53SB10	Dark gray and brown with orange Fe-staining gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-4cm, subrounded to subblocky sandstone and siltstone, occasional red- brown sand grains. Silt is firm and moist. Refusal at 120" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	15.39	< LOD	< LOD	737.3	< LOD	2666.06	48.34	< LOD
12SM54SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										l
12SM54SB	4-24		Medium brown to olive brown silt. Very soft, no plasticity, low moisture, organic-rich, occasiona roots, loamy.	loess. Abundant organic material.		Dry to moist	< LOD	< LOD	< LOD	254.97	< LOD	4573.7	< LOD	< LOD
12SM54SB	24-48		Olive gray with occasional brown Fe-staining silt with trace sand. Sand is very fine. Low plasticity, firm, low moisture, Fe-staining with organics.	Indeterminate. Possible loess.		Dry to moist								
12SM54SB	48-72		Same as above	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	< LOD	654.32	< LOD	5350.96	36.83	83.74
12SM54SB	72-96		Same as above, except with root casts and bubbles, increased moisture and plasticity.	Indeterminate. Possible loess.		Moist	15.25	< LOD	< LOD	605.82	< LOD	4632.75	< LOD	49.95
125105458	84-120		Same as above, except with trace gravel to 2 cm and increased moisture.	MIXED IDESS/KG SOII		MOIST	10.32	< LOD	< LOD	501.77	< LOD	0.170	< LOD	48.05
12SM54SB	120-126	12SM54SB11	Olive gray gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-3 cm, angular to rounded sandstone and siltstone, altered, occasional calcareous mineralization, occasional Fe- stained sand grains. Silt is firm, low plasticity, moist. Refusal at 126" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	15.99	< LOD	< LOD	386.23	< LOD	1661.92	< LOD	64.52
12SM55SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM55SB	2-12		Olive brown sandy silt. Sand (30%) is very fine to fine grained. Silt is soft, no plasticity, moist, with organics and roots.	Indeterminate. Possible loess. Abundant organic material.		Moist	< LOD	< LOD	< LOD	309.36	< LOD	3750.83	< LOD	54.65
12SM55SB	12-24		Same as above, except with occasional Fe-staining and trace gravel (2-3 cm).	Mixed loess/KG soil		Moist	< LOD	< LOD	< LOD	199.85	< LOD	3096.24	< LOD	78.58
12SM55SB	24-36		Olive brown gray gravelly silty sand. Gravel (30%) is fine to 3 cm, angular to blocky sandstone and siltstone. Sand (40%) is very fine to medium grained. 30% silt. Trace organics.	Mixed loess/KG soil		Moist	< LOD	< LOD	< LOD	311.17	< LOD	1208.13	< LOD	98.69
12SM55SB	36-48	12SM55SB04	Transition from above to sandy gravelly silt. Gravel is fine to 4 cm platy siltstone and angular to blocky sandstone. Sand is fine to coarse grained. Silt is firm with low plasticity. Occasional organics. Occasional orange brown Fe-staining associated with sand grains.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	14.47	< LOD	< LOD	719.54	< LOD	< LOD	27.11	64.48
12SM55SB	48-60		Same as above, except with more larger sized gravel, silt has low to moderate plasticity, and increased Fe-staining.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	27.05	< LOD	< LOD	480.97	< LOD	828.53	< LOD	78.71
12SM55SB	60-66		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	85.87	< LOD	< LOD	697.99	< LOD	< LOD	< LOD	46.85

	Sample	Laboratory			Comments Regarding Possible	Field Meieture	XRF Result (p	(mai						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Arsenic	Mercury	Antimony	Barium	Cadmium	Calcium	Cesium	Chromium
12SM55SB	bgs) 66-72		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	60.82	< LOD	< LOD	503.39	< LOD	< LOD	< LOD	68.16
12SM55SB	72-78		Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	49.42	< LOD	< LOD	675.41	< LOD	< LOD	< LOD	107.95
12SM55SB	78-84	12SM55SB07	Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale. Refusal at 84" on rocks, likely KG Group Bedrock.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	51.69	< LOD	< LOD	524.64	< LOD	166.27	< LOD	116.29
12SM56SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)										
12SM56SB	3-24		Medium brown silt with sand. Sand is very fine grained. Silt is has moderate plasticity, moist, occasional organics.	Indeterminate. Possible loess. Abundant organic material.			8.89	< LOD	< LOD	141.73	< LOD	3816.9	< LOD	< LOD
12SM56SB	24-48		Medium gray to olive gray gravelly silt. Gravel is 1-3 cm angular sandstone and siltstone. Silt has medium plasticity, moist, soft.	Indeterminate. Possible mixed Loess/KG soil			9.51	< LOD	< LOD	581.04	< LOD	1611.17	21.46	73.57
12SM56SB	48-54	12SM56SB05	Brown silty gravel with sand. Sand is medium grained. Gravel is 0.5-5cm, subrounded to angular sandstone and siltstone. Silt has medium plasticity and is moist.	KG soil	undisturbed. KG soil appears non- mineralized.		9.46	< LOD	< LOD	182.71	< LOD	1141.2	< LOD	57.4
12SM57SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM57SB	4-24		Medium brown sandy silt with gravel. Gravel is 2-4 cm, angular to subrounded sandstone. Sand is very fine grained. Silt is wet, low plasticity, occasional organics and roots.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Wet	< LOD	< LOD	< LOD	155.12	< LOD	3698.46	< LOD	57.7
12SM57SB	24-48		Light gray to medium brown silt with sand and gravel. Sand is very fine grained. Gravel is 1- 2cm, angular to subrounded sandstone. Silt has brown Fe-staining, firm, low moisture, low plasticity, micaceous.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Dry to moist	< LOD	< LOD	< LOD	532.59	< LOD	4311.25	< LOD	84.68
12SM57SB	48-60	12SM57SB05	Same as above, except with increased gravel. Refusal at 60" due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Dry to moist	16.33	< LOD	< LOD	727.55	< LOD	4703.24	29.1	68.07
12SM58SB	0-12		Organic mat (tundra)	Organic mat (tundra)										
12SM58SB	12-24	12SM58SB02	Medium brown sandy silt with gravel. Gravel is fine to 2 cm, subrounded sandstone. Sand is very fine to fine grained. Silt is very moist, very soft, no plasticity, organic-rich and roots. Medium chick brown conducit with carvel or forced is fine to 2 cm cubrounded conductors. Some	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	12	< LOD	< LOD	220.56	< LOD	3302.73	< LOD	65.57
12SM58SB	24-48		is very fine to fine grained. Silt is very wet, very soft, no plasticity. Perched water layer flooding borehole.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	9.12	< LOD	< LOD	485.14	< LOD	3084.85	< LOD	65.04
12SM58SB	48-66		Same as above	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	8.65	< LOD	< LOD	556.51	< LOD	3229.65	< LOD	66.02
12SM58SB	66-72		Same as above, except with increased 1-4cm gravel (30%). Refusal at 72" due to gravel.	KG soil	soil appears non-mineralized.		< LOD	< LOD	< LOD	507.01	< LOD	3655.16	< LOD	80.92
12SM59SB	0-4		Organic mat (tundra)	Organic mat (tundra)		Moist								
12SM59SB	4-12	12SM59SB01	Medium to dark brown silt with gravel. Very soft. Organic-rich. No plasticity. Loamy. Gravel (10%) is angular to blocky, sandstone, 2-4 cm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	< LOD	182.1	< LOD	2937.89	< LOD	45.4
12SM59SB	12-24		Medium brown gravelly silt. Gravel (40%) is 3-7 cm, angular to blocky sandstone and siltstone. Silt is soft to firm, none to low plasticity. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	< LOD	265.43	< LOD	2725.9	< LOD	56.97
12SM59SB	24-36		Same as above, except gravel is 5-8 cm, silt is loess-like, and increasing moisture.	KG soil	soil appears non-mineralized.	Moist to wet	10.28	< LOD	< LOD	296.76	< LOD	3555.54	< LOD	77.35
12SM59SB	36-48		No recovery	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	8.94	< LOD	< LOD	321.82	< LOD	3364.65	< LOD	55.78
12SM59SB	48-60	12SM59SB05	Light gray (occasional brown mottling) silt with trace gravel. Gravel is 1-3 cm, angular sandstone. Silt is low to medium plasticity, moist, soft to firm, brown/rust mottling appears to be root casts. Trace organics. Refusal at 60" due to large rock.	e KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	< LOD	611.91	< LOD	2812.06	23.07	61.05
12SM60SB	0-4		Organic mat (tundra)	Organic mat (tundra)		Wet								
12SM60SB	4-12		Light brown sandy silt with gravel. Sand is fine to medium grained. Gravel is angular to blocky, sandstone, 1-4cm, occasional subblocky. Many roots. Abundant decomposing organics. Soft and loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	14.14	< LOD	< LOD	302.61	< LOD	2866.14	< LOD	41.86
12SM60SB	12-24		Light brown silty gravel with sand. Sand is fine grained. Gravel is 3-7cm, angular to platy, sandstone with occasional siltstone. Silt is organic rich, loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	9.95	< LOD	< LOD	456.84	< LOD	3209.89	< LOD	< LOD
12SM60SB	24-36		Light brown gray gravelly silt with sand. Sand is very fine to fine grained. Gravel (30%) is platy, siltstone, occasional sandstone, 3-6 cm, occasional blocky sandstone. Silt is loess-like with more sand, none to low plasticity, soft.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	< LOD	< LOD	< LOD	4869.49	< LOD	55.51
12SM60SB	36-48		Same as above, except with increasing gravel (40%)	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	12.88	< LOD	< LOD	542.91	< LOD	2454.86	22.1	100.57
12SM60SB	48-60		Same as above, except with increasing sand. Loess-like silt is light gray with occasional red stained clasts, low plasticity, clasts occasionally subblocky.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	32.86	< LOD	< LOD	876.89	< LOD	395.03	49.58	< LOD
12SM60SB	60-72	12SM60SB06	Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and siltstone, 1-4cm, fresh iron oxide 'facets'. Sand is fine grained. Firm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	35.42	< LOD	< LOD	911.14	< LOD	517.93	30.7	50.55
12SM60SB	72-84	12SM60SB07	Dark brown to very dark gray sitty gravel with trace sand. Gravel is blocky to angular with occasional subrounded, strong siltstone to friable black shale, 0.5-4 cm, fresh facets. Refusal at 84" bgs as weathered bedrock transitions to bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	21.05	< LOD	< LOD	1078.76	< LOD	418.78	43.05	60.42
12SM61SB	0-4		Organic mat (tundra)	Organic mat (tundra)										
12SM61SB	4-10		wedium brown sandy sitt. Gravel is 2cm - <8cm (observed platy clast in shovel hole to 8" width), angular - blocky - platy, sandstone - siltstone, friable siltstone. Sand is fine to medium grained, quartz. Silt is low plasticity and moist. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	11.61	< LOD	< LOD	353.02	< LOD	3659.95	< LOD	76.63
12SM61SB	10-16	12SM61SB01	Same as above, except with 40% gravel, 45% silt, and 15% sand.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	22.74	< LOD	< LOD	486.35	< LOD	3911.35	< LOD	< LOD
12SM61SB	16-22		Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky, occasional platy, 1-10 cm, sandstone - siltstone. Trace organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	25.7	< LOD	< LOD	657.83	< LOD	2548.12	24.59	43.53

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Result (p	pm)						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Arsenic	Mercury	Antimony	Barium	Cadmium	Calcium	Cesium	Chromium
12SM61SB	22-34		Light to medium brown gravelly silt with sand. Gravel is subangular to subblocky, occasional	KG soil	KG soil appears undisturbed. KG	Moist to very mois	18.41	< LOD	< LOD	572.73	< LOD	3146.81	< LOD	57.86
12SM61SB	34-48		Same as above, except with increasing sand	KG soil	KG soil appears undisturbed. KG	Moist to very mois	13.84	< LOD	< LOD	836.48	< LOD	698.44	< LOD	57.73
12SM61SB	48-60	12SM61SB05	Medium brown silty gravel with sand. Gravel (70%) is angular to platy, 0.5-7cm, sandstone, occasional siltstone, iron oxide weathering. Sand is very fine to fine grained. Refusal ay 60"	KG soil	KG soil appears non-mineralized. KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	27.06	< LOD	< LOD	674.85	< LOD	896.44	< LOD	52.4
12SM62SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM62SB	4-16	12SM62SB01	Brown silt with sand. Sand is very fine grained. Silt is low plasticity. Abundant organics and roots.	Loess with abundant organic matter		Dry to moist	155.06	< LOD	375.38	289.59	< LOD	4154.04	< LOD	78.14
12SM62SB	16-22		Light brown gravelly silt with sand. Sand is very fine grained. Gravel is 1-3 cm subangular sandstone and siltstone (Kuskokwim Group). No organics. Medium to low plasticity. 20% gravel.	Mixed loess/KG soil		Moist	14.37	< LOD	< LOD	340.27	< LOD	2871.46	< LOD	59.79
12SM62SB	22-32		Same as above, except with higher moisture and trace organics.	Mixed loess/KG soil		Moist	14.35	< LOD	< LOD	436.84	< LOD	1900.75	< LOD	66.54
12SM62SB	36-42		Same as above, except with increasing subangular to angular gravel up to 3" (3" auger	Mixed loess/KG soil		WOISt	16.55	< LOD	< LOD	690.94	< LOD	1705.41	< LOD	63.81
12SM62SB	42-48		arameter). Medium brown gravelly silt with sand. Sand is very fine to fine grained. Gravel is 1-4 cm, sub- blocky to angular, sandy siltstone to silty sandstone. Low plasticity. 30% gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized	Moist	83.79	< LOD	< LOD	694.82	< LOD	660.44	29.87	61.32
12SM62SB	48-54		Same as above, except with gravel occasionally sub-angular.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized	Moist	131.61	< LOD	< LOD	708.69	< LOD	380.59	< LOD	57.24
12SM62SB	54-60		Same as above, except with 40% gravel, slightly darker and slightly drier.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	91.35	< LOD	< LOD	713.09	< LOD	1727.98	21.43	69.03
12SM62SB	60-64		Same as above, except with increasing very fine to fine gray sand (15%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	231.49	< LOD	< LOD	928.69	< LOD	287.71	76.9	< LOD
12SM62SB	64-72	12SM62SB06	Medium brown silty gravel with sand. Sand is very fine to fine grained (10%). Gravel is 0.5-5 cm, angular to sub-angular to blocky, sandstone to siltstone, occasional veining (60%). Silt is medium brown, low plasticity (30%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	134.88	< LOD	< LOD	733.92	< LOD	< LOD	< LOD	51.61
12SM62SB	72-78		Same as above, except gravel is angular to blocky and increases to 70%.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	161.26	< LOD	< LOD	812.63	< LOD	< LOD	< LOD	75.33
12SM62SB	78-84		Same as above.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	123.35	< LOD	< LOD	770.54	< LOD	273.08	< LOD	79.15
12SM62SB	84-90		Same as above, except with less gravel (50%) and more silt (40%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	135.62	< LOD	< LOD	871.92	< LOD	< LOD	< LOD	85.64
12SM62SB	90-96	12SM62SB08	Medium gray to medium brown gravelly silt with clay. Gravel is 1-3 cm, angular to blocky, sandstone and siltstone (brown to dark gray). Silt is medium plasticity, moist, and stiff. Appears to be in-situ weathering of black to dark gray siltstone/mudstone. Refusal at 96" (apparent bedrock)	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	97.28	< LOD	< LOD	1330.14	< LOD	309.51	< LOD	129.51
12SM63SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM63SB	4-12	12SM63SB01	Medium brown sandy silt with trace gravel. Sand is fine grained. Silt is very sift, organic-rich, no plasticity. Trace gravel is subrounded, 1-3 cm, sandstone.	to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	11.86	< LOD	< LOD	114.98	< LOD	2931.71	< LOD	< LOD
12SM63SB	12-24		Same as above, except sand (25%) is very fine to fine grained and gravel increases to 5%.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	< LOD	< LOD	< LOD	< LOD	< LOD	2642.96	< LOD	70.86
12SM63SB	24-36		Same as above, except gravel increases to 15% and is subrounded to blocky sandstone. Increasing moisture, soft, grading to light gray, no organics.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist	17.38	< LOD	< LOD	277.71	< LOD	1815.35	< LOD	87.3
12SM63SB	36-48		Same as above, except with increased moisture and low plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist to wet	21.34	< LOD	< LOD	466.81	< LOD	1641.37	< LOD	64.86
12SM63SB	48-60		Medium gray to brown sandy silt with gravel. Gravel is 0.5-3cm, angular to blocky, sandstone and siltstone, orange staining. Sand is very fine to fine grained, possible quartz. Silt is soft to firm, clumpy, medium gray, no plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	38.85	< LOD	< LOD	241.24	< LOD	326.97	< LOD	115.65
12SM63SB	60-72	12SM63SB06	Same as above, except with increasing sand, strong orange staining throughout, and increased stiffness. Refusal at 72" bgs due to rocks.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.	KG soil not encountered in soil boring.	Dry to moist	108.2	< LOD	< LOD	484.5	< LOD	< LOD	< LOD	< LOD
12SM64SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)										

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Result (p	pm)						
Station ID	(inches bgs)	Sample ID	Field Lithological Description	Interpreted Soll Type	Characterization	Description	Arsenic	Mercury	Antimony	Barium	Cadmium	Calcium	Cesium	Chromium
12SM64SB	3-12		Dark brown sandy silt with trace gravel. Gravel is fine. Sand is very fine to fine grained. Silt is	Loess with abundant		Dry to moist	18.96	< LOD	< LOD	< LOD	< LOD	2201.82	< LOD	47.94
12SM64SB	12-24		Light gray to light brown silt with sand. Sand is very fine to fine grained. Silt is moderately	Loess with abundant		Moist	8.92	< LOD	< LOD	225.15	< LOD	3071.55	< LOD	90.31
12SM64SB	24-36		Same as above, except sand grading to very fine grained. No roots.	Loess		Moist	12.27	< LOD	< LOD	283.35	< LOD	2817.5	< LOD	56.5
12SM64SB	36-48		Same as above, except no brown silt, occasional fine grained sand, increasing moisture, and	Loess		Moist to wet	10.49	< LOD	< LOD	316.22	< LOD	3351.55	< LOD	87.86
12SM64SB	48-60		Light gray to light olive silt with sand. Low plasticity. Firm. Red brown staining along roots.	Loess		Moist to wet	16.17	< LOD	< LOD	444.81	< LOD	2993.07	< LOD	80.2
12SM64SB	60-72		Same as above, except with possible clay, medium plasticity, and less red brown staining along roots.	Loess		Moist to wet	10.73	< LOD	< LOD	411.05	< LOD	2586.96	< LOD	90.53
12SM64SB	72-84		Same as above, except it appears to contain a paleo moss horizon. Refusal at 84" due to rocks.	Loess	Undisturbed KG soil likely present at bottom of soil boring, but no KG soil recovered in soil sample.	Wet	< LOD	< LOD	< LOD	399.58	< LOD	1345.06	< LOD	70.59
12SM65SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist								
12SM65SB	2-12		Medium olive brown silty sand. Silt 40%. Sand 60%, very fine to fine grained. Very loose. Organic rich with roots. Loamy.	Loess with abundant organic matter		Dry to moist	< LOD	< LOD	< LOD	175.8	< LOD	3667.86	< LOD	84.48
12SM65SB	12-24		Medium olive gray silty sand. 45% silt. 55% sand, very fine. Loose. Occasional roots. Occasional Fe staining. Trace organics.	Loess		Dry to moist	< LOD	< LOD	< LOD	123.27	< LOD	2983.54	< LOD	58.88
12SM65SB	24-36		Same as above, except 40% silt, 60% sand, increasing brown color.	Loess		Dry to moist	13.68	< LOD	< LOD	153.99	< LOD	3704.16	< LOD	80.67
12SM65SB	36-48		Same as above, except with occasional orange brown Fe-staining.	Loess		Dry to moist	12.15	< LOD	< LOD	288.93	< LOD	3248.78	< LOD	66.6
12SM65SB	48-60		Olive brown and orange gray sandy silt. Sand (40%) is very fine grained. Silt is soft to firm, none to low plasticity, and micaceous.	Loess		Moist	< LOD	< LOD	< LOD	320.04	< LOD	4010.05	< LOD	88.5
12SM65SB	60-72		Same as above, except low plasticity.	Loess		Moist to wet	9.1	< LOD	< LOD	528.43	< LOD	4244.71	< LOD	79.65
12SM65SB	72-84		Same as above, except there is a 1-2" lens of medium grained sand.	Loess		Moist to wet	< LOD	< LOD	< LOD	563.23	< LOD	3034.46	< LOD	69.16
12SM65SB 12SM65SB	84-96 96-108		Same as above, except increasing silt, and tirm. Same as above, except it includes banding of red brown Fe-staining in fine grained sand	Loess		Moist to wet Moist to wet	11.67	< LOD < LOD	< LOD < LOD	378.07 391.23	< LOD < LOD	3495.05 2691.26	< LOD	94.62 70.15
12SM65SB	108-120		Showing mild concletion.	10000		Moist to wet	9.54	<100	<1.0D	332.68	<1.0D	2770 76	<100	68 14
12SM65SB	120-132		Same as above, except with paleo tundra	LOESS		Moist	18 57		<1.0D	457 78	<10D	2595.82	<100	100.14
12SM65SB	132-144	12SM65SB12	Same as above, except grading to silty sand with gravel. Sand is fine to coarse grained, possible quartz. Gravel is sandstone with strong red brown to gray brown Fe-staining, 0.5-26cm, subangular to blocky. Stiff. Maximum length of hand auger 12' bgs.	Mixed loess/KG soil	Undisturbed KG soil likely present at bottom of soil boring, but only mixed loess/KG soil recovered in soil sample. KG soil appears mineralized.	Moist	48.77	< LOD	< LOD	520.64	< LOD	1283.74	< LOD	95.96
12SM66SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist								
12SM66SB	2-12		Light gray to olive gray sandy silt. Sand is very fine grained. Silt is soft, low moisture, no plasticity.	Loess		Dry to moist	< LOD	< LOD	< LOD	238.4	< LOD	3085.37	< LOD	78.21
12SM66SB	12-24		12" to 16" same as above. 16" to 20" highly organic silt with decomposing organic matter, roots, paleosol. 20" to 24" olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess/Paleosol/Loess		Dry to moist	< LOD	< LOD	< LOD	156.5	< LOD	2639.92	< LOD	83.57
12SM66SB	24-36		Olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess		Dry to moist	< LOD	< LOD	< LOD	242.04	< LOD	3588.42	< LOD	38.98
12SM66SB	36-48		Same as above	Loess		Moist	10.18	< LOD	< LOD	255.92	< LOD	3018.27	< LOD	55.72
12SM66SB	48-60		Same as above, except increasing moisture, low plasticity. 30% sand. 70% silt.	Loess		Moist	11.21	< LOD	< LOD	360.76	< LOD	3779.23	< LOD	66.89
12SM66SB	60-72		Same as above, except occasional Fe-staining	Loess		Moist	< LOD	< LOD	< LOD	456.62	< LOD	3007.03	< LOD	93.35
1251V1005B	12-04 84-96		Same as above, except with decreasing very fine grained sand (30%)	LUESS		Moiet				307.13		3287.04		04.00 76.10
12SM66SB	96-108		Same as above, except with decreasing very fine grained sand (0070). Plasticity, and increased Fe-staining	Loess		Moist	13.77	< LOD	< LOD	347.88	< LOD	3077.08	< LOD	77.52
12SM66SB	108-120		Same as above, except with increasing very fine to medium grained sand (20%). Occasional Fe-stained medium brown concretions associated with sand grains	Loess		Moist	9.14	< LOD	< LOD	395.4	< LOD	3361.54	< LOD	97.11
12SM66SB	120-132		Same as above, Except with increasing red brown Fe-staining. Medium plasticity.	Loess		Moist to wet	25.26	< LOD	< LOD	355.74	< LOD	2015.84	< LOD	51.17
12SM66SB	132-144		Same as above, except with possible clay. Maximum length of hand auger 12' bgs.	Loess	Undisturbed KG soil likely present below loess, but no KG soil encountered in soil boring.	Moist to wet	10.8	< LOD	< LOD	238.53	< LOD	2299.53	< LOD	66.04

Note: XRF results are for non-dried samples. See Field Moisture Description for qualitative observations of moisture content of sample.

lote: XRF results are for non-dried samples. See Field Moisture D Key: ' = feet " = inches bgs = Below ground surface cm = centimeter Fe = iron ID = Identification KG soil = Kuskokwim Group bedrock-derived soil XRF = X-ray fluorescence spectrometry < LOD = Less than the XRF instrument level of detection ppm = Parts per million. XRF = X-ray fluorescence

	Sample	Laboratory			Comments Regarding Possible	Field Moisture	XRF Re	sult (ppm)						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil	Description	Cobalt	Copper	Iron	Lead	Manganese	Molybdenum	Nickel	Palladium
100M510D	bgs)		Organia mat (disturbed)	Organia mat (disturbed)	Characterization			coppe.			linanganooo			
125105158	0-4		Medium gray gravelly silt with sand. Sand is very fine to medium grained. Gravel is angular to	Organic mat (disturbed)	KG soil not demonstrably									
12SM51SB	4-24		blocky to subblocky, 0.5-3cm, sandstone and siltstone. Silt is moist, soft to firm, no plasticity, occasional organics, occasional Fe-staining.	KG soil	undisturbed. KG soil appears mineralized.	Moist	153.14	47.79	17547.61	< LOD	281.26	< LOD	< LOD	< LOD
12SM51SB	24-48		Same as above, except less gravel and sand, low plasticity. Appears to be possible loess mixed with gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears	Moist	< LOD	< LOD	17081.1	11.66	261.12	< LOD	< LOD	< LOD
12SM51SB	48-72	12SM51SB06	Grading from above to light gray to brown gravely sitt. Gravel is 0.5-4cm, angular to subrounded sandstone (grange brown) and sittstone. Sitt is firm, low plasticity, occasional Eq.	KG soil	KG soil not demonstrably		<1.00	<100	18510 57	<1.00	320.08			<1.0D
12010101010	40-12	120101310800	staining, occasional roots and organics. Refusal at 72" bgs due to gravel.	100 301	mineralized.		LOD	LOD	10010.07	LOD	320.30	(LOD	LOD	(LOD
12SM52SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM52SB	4-24	12SM52SB02	Brown sandy silt. Sand is very fine grained. Silt is very sift, no plasticity, organic-rich, loamy.	Indeterminate. Possible loess. Abundant organic material.			< LOD	< LOD	18588.86	< LOD	322.96	< LOD	< LOD	< LOD
12SM52SB	24-48		Same as above, except includes roots.	Indeterminate. Possible loess. Abundant organic			195.83	< LOD	19849.18	< LOD	369.62	< LOD	< LOD	< LOD
12SM52SB	48-72		Light gray silt with sand. Sand is very fine grained. Silt is low to medium plasticity, low moisture firm root casts. Fe-staining	Indeterminate. Possible		Dry to moist	< LOD	< LOD	20862.48	11.93	408.96	< LOD	< LOD	< LOD
12SM52SB	72-96		Same as above	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	16009.01	< LOD	270.67	< LOD	< LOD	< LOD
12SM52SB	96-120	12SM52SB10	Olive gray to dark gray with occasional brown mottling (Fe-staining) gravely silt with sand. Gravel is angular to subrounded, fine to 2cm sandstone and siltstone. Sand is fine grained. Silt is firm to stiff low plasticity, moist Possible grading of loss to KG Group soil	Indeterminate. Possible mixed loess and KG soil.		Moist	< LOD	< LOD	14252.71	< LOD	179.86	< LOD	< LOD	< LOD
12SM52SB	120-132	12SM52SB11	Dark gray gravel with silt and sand. Sand is medium to coarse grained. Gravel is angular to blocky altered sandstone and siltstone, fine to 3cm, Fe-staining, occasional calcareous mineralization. Low moisture.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	< LOD	52.15	54975.18	< LOD	868.14	< LOD	93.83	< LOD
12SM53SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM53SB	4-24		Olive gray silt. Very soft. Very low moisture. No plasticity. Organic-rich. Roots. Loamy.	Indeterminate. Possible loess. Abundant organic		Dry to moist	< LOD	29.01	18717.36	< LOD	345.25	< LOD	< LOD	< LOD
12SM53SB	24-48		Same as above, except slightly micaceous and less organics.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	< LOD	< LOD	18691.92	< LOD	319.36	< LOD	< LOD	< LOD
12SM53SB	48-72		Medium gray to olive gray silt with trace sand. Sand is very fine grained. Silt is firm, occasional Fe-staining, low plasticity, low moisture.	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	20635.18	< LOD	432.58	< LOD	< LOD	< LOD
12SM53SB	72-96		Same as above, except increased moisture.	Indeterminate. Possible loess.		Moist	< LOD	< LOD	20810.1	< LOD	291.49	< LOD	< LOD	< LOD
12SM53SB	96-120	12SM53SB10	Dark gray and brown with orange Fe-staining gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-4cm, subrounded to subblocky sandstone and siltstone, occasional red- brown sand grains. Silt is firm and moist. Refusal at 120" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	< LOD	35.35	35338.89	< LOD	235.17	< LOD	< LOD	< LOD
12SM54SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM54SB	4-24		Medium brown to olive brown silt. Very soft, no plasticity, low moisture, organic-rich, occasiona roots, loamy.	Indeterminate. Possible loess. Abundant organic material		Dry to moist	< LOD	< LOD	20299.2	< LOD	363.17	< LOD	< LOD	< LOD
12SM54SB	24-48		Olive gray with occasional brown Fe-staining silt with trace sand. Sand is very fine. Low plasticity, firm, low moisture, Fe-staining with organics.	Indeterminate. Possible loess.		Dry to moist								
12SM54SB	48-72		Same as above	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	17447.4	< LOD	283.42	< LOD	< LOD	< LOD
12SM54SB	72-96		Same as above, except with root casts and bubbles, increased moisture and plasticity.	Indeterminate. Possible loess.		Moist	< LOD	40.83	21393.78	< LOD	408.19	< LOD	< LOD	< LOD
12SM54SB	84-120		Same as above, except with trace gravel to 2cm and increased moisture.	Mixed loess/KG soil		Moist	< LOD	38.2	18713.44	10.44	468.18	< LOD	< LOD	< LOD
12SM54SB	120-126	12SM54SB11	Olive gray gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-3 cm, angular to rounded sandstone and siltstone, altered, occasional calcareous mineralization, occasional Fe- stained sand grains. Silt is firm, low plasticity, moist. Refusal at 126" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	< LOD	< LOD	32597.23	18.54	618.63	< LOD	< LOD	< LOD
12SM55SB	0-2	İ	Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM55SB	2-12		Olive brown sandy silt. Sand (30%) is very fine to fine grained. Silt is soft, no plasticity, moist, with organics and roots.	Indeterminate. Possible loess. Abundant organic		Moist	160.43	< LOD	14576.07	< LOD	170.02	< LOD	< LOD	< LOD
12SM55SB	12-24		Same as above, except with occasional Fe-staining and trace gravel (2-3cm).	Mixed loess/KG soil		Moist	< LOD	< LOD	16184.34	< LOD	272.26	< LOD	< LOD	< LOD
12SM55SB	24-36		Olive brown gray gravelly sitty sand. Gravel (30%) is fine to 3cm, angular to blocky sandstone and sittstone. Sand (40%) is very fine to medium grained. 30% silt. Trace organics.	Mixed loess/KG soil		Moist	< LOD	< LOD	15674.3	12.17	431.03	< LOD	< LOD	< LOD
12SM55SB	36-48	12SM55SB04	Transition from above to sandy gravelly silt. Gravel is fine to 4cm platy siltstone and angular to blocky sandstone. Sand is fine to coarse grained. Silt is firm with low plasticity. Occasional organics. Occasional orange brown Fe-staining associated with sand grains.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	46017.64	< LOD	403.98	< LOD	< LOD	< LOD
12SM55SB	48-60		Same as above, except with more larger sized gravel, silt has low to moderate plasticity, and increased Fe-staining.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	34743.3	18.16	866.47	< LOD	103.88	< LOD
12SM55SB	60-66		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	525.55	50.46	61306.32	< LOD	777.07	< LOD	< LOD	< LOD

	Sample	I charatam.			Comments Regarding Possible		XRF Re	sult (nnm)						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Cobalt	Copper	Iron	Lead	Manganese	Molybdenum	Nickel	Palladium
12SM55SB	66-72		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Festaining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	52.6	32773.8	< LOD	538.1	< LOD	99.26	< LOD
12SM55SB	72-78		Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	177.51	62.07	21496.06	15.18	676.48	< LOD	< LOD	< LOD
12SM55SB	78-84	12SM55SB07	Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale. Refusal at 84" on rocks, likely KG Group Bedrock.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	55.99	17346.24	< LOD	237.17	< LOD	< LOD	< LOD
12SM56SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)										
12SM56SB	3-24		Medium brown silt with sand. Sand is very fine grained. Silt is has moderate plasticity, moist, occasional organics.	Indeterminate. Possible loess. Abundant organic material.	:		149.84	< LOD	13113.28	< LOD	90.41	< LOD	< LOD	< LOD
12SM56SB	24-48		Medium gray to olive gray gravelly silt. Gravel is 1-3cm angular sandstone and siltstone. Silt has medium plasticity, moist, soft.	Indeterminate. Possible mixed Loess/KG soil			197.88	34.18	21354.03	< LOD	568.91	< LOD	< LOD	< LOD
12SM56SB	48-54	12SM56SB05	Brown silty gravel with sand. Sand is medium grained. Gravel is 0.5-5cm, subrounded to angular sandstone and siltstone. Silt has medium plasticity and is moist.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.		< LOD	< LOD	11100.99	11.24	562.24	8.38	< LOD	< LOD
12SM57SB	0-4	İ	Organic mat (disturbed)	Organic mat (disturbed)		Ì						i i		
12SM57SB	4-24		Medium brown sandy silt with gravel. Gravel is 2-4cm, angular to subrounded sandstone. Sand is very fine grained. Silt is wet, low plasticity, occasional organics and roots.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Wet	< LOD	< LOD	11710.59	< LOD	159.92	< LOD	< LOD	< LOD
12SM57SB	24-48		Light gray to medium brown silt with sand and gravel. Sand is very fine grained. Gravel is 1- 2cm, angular to subrounded sandstone. Silt has brown Fe-staining, firm, low moisture, low plasticity, micaceous.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Dry to moist	158.6	< LOD	16157.88	< LOD	311.83	< LOD	< LOD	< LOD
12SM57SB	48-60	12SM57SB05	Same as above, except with increased gravel. Refusal at 60" due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Dry to moist	718.96	46.29	43768.48	15.36	762.23	< LOD	< LOD	< LOD
12SM58SB	0-12		Organic mat (tundra)	Organic mat (tundra)										
12SM58SB	12-24	12SM58SB02	Medium brown sandy silt with gravel. Gravel is fine to 2 cm, subrounded sandstone. Sand is very fine to fine grained. Silt is very moist, very soft, no plasticity, organic-rich and roots.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	< LOD	< LOD	16773.93	< LOD	278.58	< LOD	< LOD	< LOD
12SM58SB	24-48		is very fine to fine grained. Silt is very wet, very soft, no plasticity. Perched water layer flooding borehole.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	159.9	< LOD	19684.03	< LOD	351.79	< LOD	< LOD	< LOD
12SM58SB	48-66		Same as above	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	< LOD	35.53	22704.46	< LOD	241.71	< LOD	< LOD	< LOD
12SM58SB	66-72		Same as above, except with increased 1-4cm gravel (30%). Refusal at 72" due to gravel.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized		< LOD	33.92	18627.47	14.25	321.05	< LOD	< LOD	< LOD
12SM59SB	0-4		Organic mat (tundra)	Organic mat (tundra)	son appears non mineralized.	Moist							<u> </u>	
12SM59SB	4-12	12SM59SB01	Medium to dark brown silt with gravel. Very soft. Organic-rich. No plasticity. Loamy. Gravel (10%) is angular to blocky, sandstone, 2-4cm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	16661.37	11.82	267.29	< LOD	< LOD	< LOD
12SM59SB	12-24		Medium brown gravelly silt. Gravel (40%) is 3-7cm, angular to blocky sandstone and siltstone. Silt is soft to firm, none to low plasticity. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	157.24	< LOD	16641.44	< LOD	283.31	< LOD	< LOD	< LOD
12SM59SB	24-36		Same as above, except gravel is 5-8cm, silt is loess-like, and increasing moisture.	KG soil	soil appears undisturbed. KG	Moist to wet	< LOD	< LOD	16287.61	< LOD	311.06	< LOD	< LOD	< LOD
12SM59SB	36-48		No recovery	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	< LOD	< LOD	16602.59	< LOD	361.57	< LOD	< LOD	< LOD
12SM59SB	48-60	12SM59SB05	Light gray (occasional brown mottling) silt with trace gravel. Gravel is 1-3cm, angular sandstone. Silt is low to medium plasticity, moist, soft to firm, brown/rust mottling appears to be root casts. Trace organics. Refusal at 60° due to large rock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	39.27	13653.02	12.13	296.06	< LOD	< LOD	< LOD
12SM60SB	0-4	ĺ	Organic mat (tundra)	Organic mat (tundra)		Wet								
12SM60SB	4-12		Light brown sandy silt with gravel. Sand is fine to medium grained. Gravel is angular to blocky, sandstone, 1-4cm, occasional subblocky. Many roots. Abundant decomposing organics. Soft and loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	20440.87	< LOD	255.11	< LOD	< LOD	< LOD
12SM60SB	12-24		Light brown silty gravel with sand. Sand is fine grained. Gravel is 3-7cm, angular to platy, sandstone with occasional siltstone. Silt is organic rich, loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	17298.15	11.28	284.76	< LOD	< LOD	< LOD
12SM60SB	24-36		Light brown gray gravelly silt with sand. Sand is very fine to fine grained. Gravel (30%) is platy, siltstone, occasional sandstone, 3-6cm, occasional blocky sandstone. Silt is loess-like with more sand, none to low plasticity, soft.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	17210.09	< LOD	282.17	< LOD	< LOD	< LOD
12SM60SB	36-48		Same as above, except with increasing gravel (40%)	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	22088.61	< LOD	397.82	< LOD	< LOD	< LOD
12SM60SB	48-60		Same as above, except with increasing sand. Loess-like silt is light gray with occasional red stained clasts, low plasticity, clasts occasionally subblocky.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	43.63	62629.96	16.52	1456.34	< LOD	< LOD	< LOD
12SM60SB	60-72	12SM60SB06	Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and siltstone, 1-4cm, fresh iron oxide 'facets'. Sand is fine grained. Firm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	56.08	51842.03	< LOD	925.53	< LOD	< LOD	< LOD
12SM60SB	72-84	12SM60SB07	occasional subrounded, strong sittstone to friable black shale, 0.5-4cm, fresh facets. Refusal at 84" bgs as weathered bedrock transitions to bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	415.54	72.83	61331.75	26.41	936.08	< LOD	< LOD	< LOD
12SM61SB	0-4		Organic mat (tundra)	Organic mat (tundra)										<u> </u>
12SM61SB	4-10		width), angular - blocky - platy, sandstone - siltstone, friable siltstone. Sand is fine to medium grained, quartz. Silt is low plasticity and moist. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	20733.15	10.23	477.54	< LOD	< LOD	< LOD
12SM61SB	10-16	12SM61SB01	Same as above, except with 40% gravel, 45% silt, and 15% sand.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	20157.93	< LOD	470.38	< LOD	< LOD	< LOD
12SM61SB	16-22		occasional platy, 1-10 cm, sandstone - siltstone. Trace organics.	KG soil	soil appears undisturbed. KG	Moist	298.01	< LOD	28567.69	14.01	503.11	< LOD	< LOD	< LOD

	Sample Depth	Laboratorv			Comments Regarding Possible	Field Moisture	XRF Res	sult (ppm)						
Station ID	(inches bas)	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Cobalt	Copper	Iron	Lead	Manganese	Molybdenum	Nickel	Palladium
12SM61SB	22-34		Light to medium brown gravelly silt with sand. Gravel is subangular to subblocky, occasional platy 1-10 cm_sandstone - siltstone. Silt is low plasticity and firm	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized	Moist to very moist	186.14	36.98	22534.11	< LOD	707.63	< LOD	< LOD	< LOD
12SM61SB	34-48		Same as above, except with increasing sand	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized	Moist to very moist	253.79	75.97	28407.81	18.11	2145.17	< LOD	< LOD	< LOD
12SM61SB	48-60	12SM61SB05	Medium brown silty gravel with sand. Gravel (70%) is angular to platy, 0.5-7cm, sandstone, occasional siltstone, iron oxide weathering. Sand is very fine to fine grained. Refusal ay 60" bgs near weathered bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	37.89	33184.28	< LOD	1817.63	< LOD	< LOD	< LOD
12SM62SB	0-4		Organic mat (disturbed) Brown silt with sand. Sand is very fine grained. Silt is low plasticity. Abundant organics and	Organic mat (disturbed)										
12SM62SB	4-16	12SM62SB01	roots.	organic matter		Dry to moist	< LOD	< LOD	16363.58	< LOD	405.09	< LOD	< LOD	< LOD
12SM62SB	16-22		sandstone and siltstone (Kuskokwim Group). No organics. Medium to low plasticity. 20% gravel.	Mixed loess/KG soil		Moist	< LOD	30.94	22121.96	< LOD	382.61	< LOD	< LOD	< LOD
12SM62SB 12SM62SB	22-32 32-36		Same as above, except with higher moisture and trace organics. No return due to rock.	Mixed loess/KG soil Mixed loess/KG soil		Moist	< LOD	< LOD	16871.99	11.75	370.78	< LOD	< LOD	< LOD
12SM62SB	36-42		Same as above, except with increasing subangular to angular gravel up to 3" (3" auger diameter).	Mixed loess/KG soil			< LOD	< LOD	24036.84	11.81	752.17	< LOD	< LOD	< LOD
12SM62SB	42-48		Medium brown gravelly silt with sand. Sand is very fine to fine grained. Gravel is 1-4 cm, sub- blocky to angular, sandy siltstone to silty sandstone. Low plasticity. 30% gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	52.9	31510.9	14.88	1691.75	< LOD	105.88	< LOD
12SM62SB	48-54		Same as above, except with gravel occasionally sub-angular.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	297.33	45.54	29184.46	< LOD	1492.17	< LOD	< LOD	< LOD
12SM62SB	54-60		Same as above, except with 40% gravel, slightly darker and slightly drier.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	< LOD	38.3	27971.01	13.92	1200.17	< LOD	< LOD	< LOD
12SM62SB	60-64		Same as above, except with increasing very fine to fine gray sand (15%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	288.52	< LOD	49104.27	< LOD	1284.58	< LOD	< LOD	< LOD
12SM62SB	64-72	12SM62SB06	Medium brown silty gravel with sand. Sand is very fine to fine grained (10%). Gravel is 0.5-5 cm, angular to sub-angular to blocky, sandstone to siltstone, occasional veining (60%). Silt is medium brown, low plasticity (30%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	40.91	33316.89	12.28	1267.68	< LOD	< LOD	< LOD
12SM62SB	72-78		Same as above, except gravel is angular to blocky and increases to 70%.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	52.77	37256.86	16.1	1687.08	< LOD	< LOD	< LOD
12SM62SB	78-84		Same as above.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	52.02	29013.43	< LOD	1082.62	< LOD	< LOD	< LOD
12SM62SB	84-90		Same as above, except with less gravel (50%) and more silt (40%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	90.32	34010.98	18.42	1151.93	< LOD	< LOD	< LOD
12SM62SB	90-96	12SM62SB08	sandstone and siltstone (brown to dark gray). Silt with clay. Graver is 1-3 cfm, angular to blocky, sandstone and siltstone (brown to dark gray). Silt is medium plasticity, moist, and stiff. Appears to be in-situ weathering of black to dark gray siltstone/mudstone. Refusal at 96" (apparent bedrock)	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	112.38	23118.95	< LOD	733.09	< LOD	109.12	< LOD
12SM63SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM63SB	4-12	12SM63SB01	Medium brown sandy silt with trace gravel. Sand is fine grained. Silt is very sift, organic-rich, no plasticity. Trace gravel is subrounded, 1-3cm, sandstone.	to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations		Dry to moist	< LOD	< LOD	16049.69	< LOD	134.37	< LOD	< LOD	< LOD
12SM63SB	12-24		Same as above, except sand (25%) is very fine to fine grained and gravel increases to 5%.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	< LOD	< LOD	12224.45	< LOD	124.46	< LOD	< LOD	< LOD
12SM63SB	24-36		Same as above, except gravel increases to 15% and is subrounded to blocky sandstone. Increasing moisture, soft, grading to light gray, no organics.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist	< LOD	< LOD	12144.34	< LOD	132.25	< LOD	< LOD	< LOD
12SM63SB	36-48		Same as above, except with increased moisture and low plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist to wet	126.52	< LOD	11371.66	< LOD	110.84	< LOD	< LOD	< LOD
12SM63SB	48-60		Medium gray to brown sandy silt with gravel. Gravel is 0.5-3cm, angular to blocky, sandstone and siltstone, orange staining. Sand is very fine to fine grained, possible quartz. Silt is soft to firm, clumpy, medium gray, no plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	290.69	48.14	33913.03	15.85	952.48	< LOD	< LOD	< LOD
12SM63SB	60-72	12SM63SB06	Same as above, except with increasing sand, strong orange staining throughout, and increased stiffness. Refusal at 72" bgs due to rocks.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.	KG soil not encountered in soil boring.	Dry to moist	< LOD	61.68	70365.11	14.74	921.38	< LOD	< LOD	< LOD
12SM64SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)										

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Re	sult (ppm)						
Station ID	(inches bgs)	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Cobalt	Copper	Iron	Lead	Manganese	Molybdenum	Nickel	Palladium
12SM64SB	3-12		Dark brown sandy silt with trace gravel. Gravel is fine. Sand is very fine to fine grained. Silt is organic-rich, abundant roots, very soft, no plasticity, loamy.	Loess with abundant organic matter		Dry to moist	< LOD	< LOD	12360.07	< LOD	231.64	7.36	< LOD	< LOD
12SM64SB	12-24		Light gray to light brown silt with sand. Sand is very fine to fine grained. Silt is moderately moist, none to low-plasticity, soft, abundant roots, occasional organics. Grading to loess,	Loess with abundant organic matter		Moist	169.18	< LOD	19669.5	< LOD	389.98	< LOD	< LOD	< LOD
12SM64SB	24-36		Same as above, except sand grading to very fine grained. No roots.	Loess		Moist	< LOD	< LOD	17009.9	< LOD	319.86	< LOD	< LOD	< LOD
12SM64SB	36-48		Same as above, except no brown silt, occasional fine grained sand, increasing moisture, and	Loess		Moist to wet	165.84	42.95	13787.64	< LOD	241.31	< LOD	< LOD	< LOD
12SM64SB	48-60		low plasticity.	Loess		Moist to wet	<10D	<10D	16612 19	<1.0D	244 74	<1.0D	<1.0D	<10D
12SM64SB	60-72		Same as above, except with possible clay, medium plasticity, and less red brown staining along roots.	Loess		Moist to wet	< LOD	< LOD	9903.81	11.1	114.21	< LOD	< LOD	< LOD
12SM64SB	72-84		Same as above, except it appears to contain a paleo moss horizon. Refusal at 84" due to rocks.	Loess	Undisturbed KG soil likely present at bottom of soil boring, but no KG soil recovered in soil sample.	Wet	< LOD	< LOD	8494.31	< LOD	180.39	< LOD	< LOD	< LOD
12SM65SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist								
12SM65SB	2-12		Medium olive brown silty sand. Silt 40%. Sand 60%, very fine to fine grained. Very loose. Organic rich with roots. Loamy.	Loess with abundant organic matter		Dry to moist	< LOD	< LOD	18259.42	< LOD	265.41	< LOD	< LOD	< LOD
12SM65SB	12-24		Medium olive gray silty sand. 45% silt. 55% sand, very fine. Loose. Occasional roots. Occasional Fe staining. Trace organics.	Loess		Dry to moist	132.6	< LOD	13711.38	< LOD	216.42	< LOD	< LOD	< LOD
12SM65SB	24-36		Same as above, except 40% silt, 60% sand, increasing brown color.	Loess		Dry to moist	198.41	< LOD	18147.88	< LOD	285.3	< LOD	< LOD	< LOD
12SM65SB	36-48		Same as above, except with occasional orange brown Fe-staining.	Loess		Dry to moist	< LOD	< LOD	23638.09	< LOD	445.17	< LOD	< LOD	< LOD
12SM65SB	48-60 60.72		none to low plasticity, and micaceous.	Loess		Moist Moist to wet	< LOD	< LOD	16176.87	< LOD	353.53	< LOD	<lod< td=""><td>&lt; LOD</td></lod<>	< LOD
12SM65SB	72-84		Same as above, except low plasticity.	Loess		Moist to wet	<10D	<1 OD	12891 7	<10D	270.03	< LOD < LOD	<10D	< LOD
12SM65SB	84-96		Same as above, except increasing silt, and firm.	Loess		Moist to wet	< LOD	< LOD	14562.01	< LOD	297.68	< LOD	< LOD	< LOD
12SM65SB	96-108		Same as above, except it includes banding of red brown Fe-staining in fine grained sand showing mild concretion.	Loess		Moist to wet	< LOD	< LOD	13667.43	17.02	178.05	< LOD	< LOD	< LOD
12SM65SB	108-120		Same as above, except with paleo tundra (moss and roots)	Loess		Moist to wet	156.27	< LOD	13709.06	10.91	180.21	< LOD	< LOD	< LOD
12SM65SB	120-132		Same as above, except with no paleo tundra	Loess		Moist	173.56	30.31	14465.56	< LOD	397.57	< LOD	< LOD	< LOD
12SM65SB	132-144	12SM65SB12	Same as above, except grading to silty sand with gravel. Sand is fine to coarse grained, possible quartz. Gravel is sandstone with strong red brown to gray brown Fe-staining, 0.5-26cm, subangular to blocky. Stiff. Maximum length of hand auger 12' bgs.	Mixed loess/KG soil	Undisturbed KG soil likely present at bottom of soil boring, but only mixed loess/KG soil recovered in soil sample. KG soil appears mineralized.	Moist	170.57	< LOD	19490.51	10.93	422.98	< LOD	< LOD	< LOD
12SM66SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist								
12SM66SB	2-12		Light gray to olive gray sandy silt. Sand is very fine grained. Silt is soft, low moisture, no plasticity.	Loess		Dry to moist	< LOD	< LOD	13656	< LOD	214.35	< LOD	< LOD	< LOD
12SM66SB	12-24		12" to 16" same as above. 16" to 20" highly organic silt with decomposing organic matter, roots, paleosol. 20" to 24" olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess/Paleosol/Loess		Dry to moist	< LOD	< LOD	13777.35	< LOD	181.97	< LOD	< LOD	< LOD
12SM66SB	24-36		Olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess		Dry to moist	194.54	< LOD	15919.83	< LOD	292.59	< LOD	< LOD	< LOD
12SM66SB 12SM66SB	36-48		Same as above	Loess		Moist		< LOD	16676.94	< LOD	421.65	< LOD	<lod< td=""><td>&lt; LOD</td></lod<>	< LOD
12SM66SB	60-72		Same as above, except increasing molecule, low plasticity. 30 % sand. 70 % sinc.	Loess		Moist	<lod< td=""><td>35.16</td><td>14914.9</td><td>14.71</td><td>341.17</td><td>&lt; LOD</td><td><lod< td=""><td>&lt; LOD</td></lod<></td></lod<>	35.16	14914.9	14.71	341.17	< LOD	<lod< td=""><td>&lt; LOD</td></lod<>	< LOD
12SM66SB	72-84		Same as above, except with increasing sand (40%) and occasional medium gravel.	Loess		Moist	< LOD	< LOD	10721.13	11.77	127.31	< LOD	< LOD	< LOD
12SM66SB	84-96		Same as above, except with decreasing very fine grained sand (30%).	Loess		Moist	< LOD	< LOD	13020.18	15.14	167.89	< LOD	< LOD	< LOD
12SM66SB	96-108		Same as above, except with decreasing very fine grained sand (10%), low to medium plasticity, and increased Fe-staining.	Loess		Moist	148.95	< LOD	16606.14	< LOD	168.94	< LOD	< LOD	< LOD
12SM66SB	108-120		Fe-stained medium brown concretions associated with sand grains.	Loess		Moist	< LOD	< LOD	18776.99	< LOD	215.79	< LOD	< LOD	< LOD
12SM66SB	120-132		Same as above, Except with increasing red brown Fe-staining. Medium plasticity.	Loess	Undisturbed KG soil likely present	Moist to wet	175.52	< LOD	21734.17	< LOD	223.59	< LOD	< LOD	< LOD
12SM66SB	132-144		Same as above, except with possible clay. Maximum length of hand auger 12' bgs.	Loess	below loess, but no KG soil encountered in soil boring.	Moist to wet	< LOD	39.54	15296.95	10.16	180.57	< LOD	< LOD	< LOD
Note: XRF res Key: bgs cm Fe ID KG soil XRF < LOD ppm XRF	sults are for n = feet = inches = Below groi = centimeter = iron = Identificatii = Kuskokwir = X-ray fluor = X-ray fluor	on-dried samples. und surface on n Group bedrock secence spectron the XRF instrume million. escence	See Field Moisture Description for qualitative observations of moisture content of sample. derived soil netry nt level of detection											

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Resu	lt (ppm)						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Potassium	Rubidium	Scandium	Selenium	Silver	Strontium	Sulfur	Tellurium
12SM51SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										4
12SM51SB	4-24		Medium gray gravelly silt with sand. Sand is very fine to medium grained. Gravel is angular to blocky to subblocky, 0.5-3cm, sandstone and siltstone. Silt is moist, soft to firm, no plasticity, occasional organics, occasional Fe-staining.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	9828.85	53.01	< LOD	< LOD	< LOD	115.74	< LOD	< LOD
12SM51SB	24-48		Same as above, except less gravel and sand, low plasticity. Appears to be possible loess mixed with gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	8530.38	46.75	< LOD	< LOD	< LOD	120.7	< LOD	< LOD
12SM51SB	48-72	12SM51SB06	Grading from above to light gray to brown gravely silt. Gravel is 0.5-4cm, angular to subrounded sandstone (orange brown) and siltstone. Silt is firm, low plasticity, occasional Fe- staining, occasional roots and organics. Refusal at 72" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.		10160.33	48.59	< LOD	< LOD	< LOD	131.75	< LOD	< LOD
12SM52SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)		Ì		Ì				Ì		
12SM52SB	4-24	12SM52SB02	Brown sandy silt. Sand is very fine grained. Silt is very sift, no plasticity, organic-rich, loamy.	Indeterminate. Possible loess. Abundant organic material.			7553.69	42.06	< LOD	< LOD	< LOD	125.75	< LOD	< LOD
12SM52SB	24-48		Same as above, except includes roots.	Indeterminate. Possible loess. Abundant organic material.			7576.71	40.07	< LOD	< LOD	< LOD	134.37	< LOD	< LOD
12SM52SB	48-72		Light gray silt with sand. Sand is very fine grained. Silt is low to medium plasticity, low moisture, firm, root casts, Fe-staining.	Indeterminate. Possible loess.		Dry to moist	8459.13	39.26	< LOD	< LOD	< LOD	124.49	< LOD	< LOD
12SM52SB	72-96		Same as above	Indeterminate. Possible loess.		Dry to moist	7870.19	39.19	31.88	< LOD	< LOD	137.86	< LOD	< LOD
12SM52SB	96-120	12SM52SB10	Olive gray to dark gray with occasional brown mottling (Fe-staining) gravely silt with sand. Gravel is angular to subrounded, fine to 2cm sandstone and siltstone. Sand is fine grained. Silt is firm to stiff, low plasticity, moist. Possible grading of loess to KG Group soil.	Indeterminate. Possible mixed loess and KG soil.		Moist	9894.44	42.57	< LOD	< LOD	< LOD	119.5	< LOD	< LOD
12SM52SB	120-132	12SM52SB11	Dark gray gravel with silt and sand. Sand is medium to coarse grained. Gravel is angular to blocky altered sandstone and siltstone, fine to 3cm, Fe-staining, occasional calcareous mineralization. Low moisture.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	9024.49	60.48	< LOD	< LOD	< LOD	163.05	< LOD	< LOD
12SM53SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)									ļ	
12SM53SB	4-24		Olive gray silt. Very soft. Very low moisture. No plasticity. Organic-rich. Roots. Loamy.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	7808.36	37.16	< LOD	< LOD	< LOD	123.44	< LOD	< LOD
12SM53SB	24-48		Same as above, except slightly micaceous and less organics.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	7191.3	38.52	< LOD	< LOD	< LOD	123.49	< LOD	< LOD
12SM53SB	48-72		Medium gray to olive gray silt with trace sand. Sand is very fine grained. Silt is firm, occasional Fe-staining, low plasticity, low moisture.	Indeterminate. Possible loess.		Dry to moist	9217.39	45.7	< LOD	< LOD	< LOD	130.86	< LOD	< LOD
12SM53SB	72-96		Same as above, except increased moisture.	Indeterminate. Possible loess.		Moist	8754.69	46.18	31.9	< LOD	< LOD	129.44	< LOD	< LOD
12SM53SB	96-120	12SM53SB10	Dark gray and brown with orange Fe-staining gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-4cm, subrounded to subblocky sandstone and siltstone, occasional red- brown sand grains. Silt is firm and moist. Refusal at 120" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	8990.4	43.66	< LOD	< LOD	< LOD	81.88	< LOD	< LOD
12SM54SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM54SB	4-24		Medium brown to olive brown silt. Very soft, no plasticity, low moisture, organic-rich, occasiona roots, loamy.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	7061.57	40.13	< LOD	< LOD	< LOD	118.2	< LOD	< LOD
12SM54SB	24-48		Olive gray with occasional brown Fe-staining silt with trace sand. Sand is very fine. Low plasticity, firm, low moisture, Fe-staining with organics.	Indeterminate. Possible loess.		Dry to moist								
12SM54SB	48-72		Same as above	Indeterminate. Possible loess.		Dry to moist	9270.42	39.51	< LOD	< LOD	< LOD	122.79	< LOD	< LOD
12SM54SB	72-96		Same as above, except with root casts and bubbles, increased moisture and plasticity.	Indeterminate. Possible loess.		Moist	8605.75	41.45	36.63	< LOD	< LOD	117.52	< LOD	< LOD
12SM54SB	84-120		Same as above, except with trace gravel to 2cm and increased moisture.	Mixed loess/KG soil		Moist	9232.71	43.81	< LOD	< LOD	< LOD	126.68	< LOD	< LOD
12SM54SB	120-126	12SM54SB11	Olive gray gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-3 cm, angular to rounded sandstone and siltstone, altered, occasional calcareous mineralization, occasional Fe- stained sand grains. Silt is firm, low plasticity, moist. Refusal at 126" bgs due to gravel.	- KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	8434.56	50.57	< LOD	< LOD	< LOD	88.75	< LOD	< LOD
12SM55SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM55SB	2-12		Olive brown sandy silt. Sand (30%) is very fine to fine grained. Silt is soft, no plasticity, moist, with organics and roots.	Indeterminate. Possible loess. Abundant organic material.		Moist	6012.86	36.93	< LOD	< LOD	< LOD	101.02	< LOD	< LOD
12SM55SB	12-24		Same as above, except with occasional Fe-staining and trace gravel (2-3cm).	Mixed loess/KG soil		Moist	6567.17	36.87	< LOD	< LOD	< LOD	92.45	< LOD	< LOD
12SM55SB	24-36		Olive brown gray gravelly silty sand. Gravel (30%) is fine to 3cm, angular to blocky sandstone and siltstone. Sand (40%) is very fine to medium grained. 30% silt. Trace organics.	Mixed loess/KG soil		Moist	5084.49	51.23	20.24	< LOD	< LOD	90.43	< LOD	< LOD
12SM55SB	36-48	12SM55SB04	Transition from above to sandy gravelly silt. Gravel is fine to 4cm platy siltstone and angular to blocky sandstone. Sand is fine to coarse grained. Silt is firm with low plasticity. Occasional organics. Occasional orange brown Fe-staining associated with sand grains.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	3716.3	39.71	< LOD	< LOD	< LOD	60.45	< LOD	< LOD
12SM55SB	48-60		Same as above, except with more larger sized gravel, silt has low to moderate plasticity, and increased Fe-staining.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	5675.2	36.17	< LOD	< LOD	< LOD	67.34	< LOD	< LOD
12SM55SB	60-66		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	6495.7	56.31	< LOD	< LOD	< LOD	67.66	< LOD	< LOD

Number of the state         Sumple of the state         Number of the state		Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Resu	lt (ppm)						
11         12	Station ID	(inches bqs)	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Potassium	Rubidium	Scandium	Selenium	Silver	Strontium	Sulfur	Tellurium
Base         Base of the stand sequence was the stand seque	12SM55SB	66-72		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	5194.52	45.61	< LOD	< LOD	< LOD	63.28	< LOD	< LOD
Base         Base of the strange with compare status dependence base of the strange with compare status and predicts	12SM55SB	72-78		Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	7464.49	68.77	< LOD	< LOD	< LOD	58.6	< LOD	< LOD
Distance         Constrained and any series of the se	12SM55SB	78-84	12SM55SB07	Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale. Refusal at 84" on rocks, likely KG Group Bedrock.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	4041.05	47.89	22.86	< LOD	< LOD	71.49	< LOD	< LOD
Description         Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	12SM56SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)										
Image         Image <t< td=""><td>12SM56SB</td><td>3-24</td><td></td><td>Medium brown silt with sand. Sand is very fine grained. Silt is has moderate plasticity, moist, occasional organics.</td><td>loess. Abundant organic material.</td><td></td><td></td><td>6461.02</td><td>34.93</td><td>&lt; LOD</td><td>&lt; LOD</td><td>&lt; LOD</td><td>89.67</td><td>&lt; LOD</td><td>&lt; LOD</td></t<>	12SM56SB	3-24		Medium brown silt with sand. Sand is very fine grained. Silt is has moderate plasticity, moist, occasional organics.	loess. Abundant organic material.			6461.02	34.93	< LOD	< LOD	< LOD	89.67	< LOD	< LOD
Base         Base <t< td=""><td>12SM56SB</td><td>24-48</td><td></td><td>Medium gray to olive gray gravelly silt. Gravel is 1-3cm angular sandstone and siltstone. Silt has medium plasticity, moist, soft.</td><td>Indeterminate. Possible mixed Loess/KG soil</td><td></td><td></td><td>9227.07</td><td>49.04</td><td>&lt; LOD</td><td>&lt; LOD</td><td>&lt; LOD</td><td>79.92</td><td>&lt; LOD</td><td>&lt; LOD</td></t<>	12SM56SB	24-48		Medium gray to olive gray gravelly silt. Gravel is 1-3cm angular sandstone and siltstone. Silt has medium plasticity, moist, soft.	Indeterminate. Possible mixed Loess/KG soil			9227.07	49.04	< LOD	< LOD	< LOD	79.92	< LOD	< LOD
1998/500         64         Organization         Openization         Open	12SM56SB	48-54	12SM56SB05	Brown silty gravel with sand. Sand is medium grained. Gravel is 0.5-5cm, subrounded to angular sandstone and siltstone. Silt has medium plasticity and is moist.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.		4838.13	38.73	< LOD	< LOD	< LOD	65.82	< LOD	< LOD
State         And the state mean strain with any strain grant (base) is also all state and out.         State	12SM57SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
Image: state         Image: state<	12SM57SB	4-24		Medium brown sandy silt with gravel. Gravel is 2-4cm, angular to subrounded sandstone. Sand is very fine grained. Silt is wet, low plasticity, occasional organics and roots.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Wet	8210.95	37.64	< LOD	< LOD	< LOD	85.31	< LOD	< LOD
Display         Display <t< td=""><td>12SM57SB</td><td>24-48</td><td></td><td>Light gray to medium brown silt with sand and gravel. Sand is very fine grained. Gravel is 1- 2cm, angular to subrounded sandstone. Silt has brown Fe-staining, firm, low moisture, low plasticity, microcoust</td><td>KG soil</td><td>KG soil not demonstrably undisturbed. KG soil appears non- mineralized</td><td>Dry to moist</td><td>8507.81</td><td>43.83</td><td>&lt; LOD</td><td>&lt; LOD</td><td>&lt; LOD</td><td>112.63</td><td>&lt; LOD</td><td>&lt; LOD</td></t<>	12SM57SB	24-48		Light gray to medium brown silt with sand and gravel. Sand is very fine grained. Gravel is 1- 2cm, angular to subrounded sandstone. Silt has brown Fe-staining, firm, low moisture, low plasticity, microcoust	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized	Dry to moist	8507.81	43.83	< LOD	< LOD	< LOD	112.63	< LOD	< LOD
1938/0860         0.72         Organic mathy many mask. Using the target many mark target in the target many mark target in the target mark targe	12SM57SB	48-60	12SM57SB05	Same as above, except with increased gravel. Refusal at 60" due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized	Dry to moist	8067.42	42.28	< LOD	< LOD	< LOD	108.63	< LOD	< LOD
12 Notes         Main free prime the grant with grant of grant with grant of grant with any main trap and prime the grant with grant with grant with grant of grant with any main trap and prime trap and prima trap and prime trap and prima trap and prime trap a	12SM58SB	0-12		Organic mat (tundra)	Organic mat (tundra)										
123083         24.4         Impact the term and analysis is any mixture are analysis. We need in the term of the term and analysis is any mixture are analysis.         NG and appears undicated.         Very weil         98.92         9.81         1.00         1.00         8.00        8.00        8.00 <th< td=""><td>12SM58SB</td><td>12-24</td><td>12SM58SB02</td><td>Medium brown sandy silt with gravel. Gravel is fine to 2 cm, subrounded sandstone. Sand is very fine to fine grained. Silt is very moist, very soft, no plasticity, organic-rich and roots.</td><td>KG soil</td><td>KG soil appears undisturbed. KG soil appears non-mineralized.</td><td>Moist to wet</td><td>6527.03</td><td>34.93</td><td>&lt; LOD</td><td>&lt; LOD</td><td>&lt; LOD</td><td>76.77</td><td>&lt; LOD</td><td>&lt; LOD</td></th<>	12SM58SB	12-24	12SM58SB02	Medium brown sandy silt with gravel. Gravel is fine to 2 cm, subrounded sandstone. Sand is very fine to fine grained. Silt is very moist, very soft, no plasticity, organic-rich and roots.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	6527.03	34.93	< LOD	< LOD	< LOD	76.77	< LOD	< LOD
128468         64.0         56.00         64.00         64.00         94.00 <th< td=""><td>12SM58SB</td><td>24-48</td><td></td><td>is very fine to fine grained. Silt is very wet, very soft, no plasticity. Perched water layer flooding borehole.</td><td>KG soil</td><td>KG soil appears undisturbed. KG soil appears non-mineralized.</td><td>Very wet</td><td>9096.24</td><td>39.61</td><td>&lt; LOD</td><td>&lt; LOD</td><td>&lt; LOD</td><td>93.47</td><td>&lt; LOD</td><td>&lt; LOD</td></th<>	12SM58SB	24-48		is very fine to fine grained. Silt is very wet, very soft, no plasticity. Perched water layer flooding borehole.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	9096.24	39.61	< LOD	< LOD	< LOD	93.47	< LOD	< LOD
123M368         64-72         Same as above, except with moreased 1-4m gravel (20%), Reducti at 27 due to gravel.         KG soil         Mode and appears monitoning of the monitenee of the monitoning of the monitene monitoning of the monite	12SM58SB	48-66		Same as above	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	9240.17	47.86	< LOD	< LOD	< LOD	98.45	< LOD	< LOD
12384958         0.4         Organe mat (unity)         Organe mat (unity)         Meet         No         No         No         No         No         No           123849580         4.12         123849580         Medium to dask brown shw di gavel. Very soft. Ognici/th, Norgared Michael And Micha	12SM58SB	66-72		Same as above, except with increased 1-4cm gravel (30%). Refusal at 72" due to gravel.	KG soil	soil appears undisturbed. KG		10290.87	45.49	< LOD	< LOD	< LOD	103.13	< LOD	< LOD
1233058       4.2       12330588       Model Model Norm 34W myanel Vary oft. Organin-rich. No plasticity, Lomm, Gravel       KG and appears undisturbed. KG       Model No       Result       Result       Model No       Result       Result       No       Result       No	12SM59SB	0-4		Organic mat (tundra)	Organic mat (tundra)		Moist								
123M058         12.24         Model is any strain transmit to grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade in the strain of the grade grade grade grade in the strain of the grade grade grade grade in the strain of the grade gr	12SM59SB	4-12	12SM59SB01	Medium to dark brown silt with gravel. Very soft. Organic-rich. No plasticity. Loamy. Gravel (10%) is angular to blocky, sandstone, 2-4cm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	6845.65	33.32	< LOD	< LOD	< LOD	77.55	< LOD	< LOD
TaskedsZ-setNote sourceSame as above, except while is soon, with a loces were, on horesand grademsKG solsol appears non-mineralized. Sol appears non-mineralized.Note to well $7,000$ $2,000$ $2,000$ $20,0000$ $20,00$	12SM59SB	12-24		Silt is soft to firm, none to low plasticity. Occasional organics.	KG soil	soil appears non-mineralized. KG soil appears undisturbed. KG	Moist	6321.67	35.57	< LOD	< LOD	< LOD	82.89	< LOD	< LOD
Link controlSolid popers in on-mineralized.Internal	12SM59SB	24-36 36-48		Same as above, except gravel is 5-8cm, slit is loess-like, and increasing moisture.	KG soil	soil appears non-mineralized. KG soil appears undisturbed. KG	Moist to wet	7363.66	37.91	< LOD	< LOD	< LOD	91.24	< LOD	< LOD
Image: constraint of the constr	12SM59SB	48-60	12SM59SB05	Light gray (occasional brown mottling) silt with trace gravel. Gravel is 1-3cm, angular sandstone. Silt is low to medium plasticity, moist, soft to firm, brown/rust mottling appears to be	KG soil	soil appears non-mineralized. KG soil appears undisturbed. KG	Moist	7012.52	42.99	< LOD	< LOD	< LOD	99.59	< LOD	< LOD
L25M003B0.4	400140000	0.4		root casts. Trace organics. Refusal at 60" due to large rock.	Orregis met (tursdag)	son appears non-mineralized.	10/-4								
12SM60SB4-12and store, 1-4m, ccasional subblocky. Mary roots. Abundant decomposing organics. SoftKG soilKG soilKG soilMoist6392.3838.07< LOD< LOD< LOD81.84< LOD< LOD< LOD< LOD< LOD81.84< LOD< /td <td>1251016058</td> <td>0-4</td> <td></td> <td>Light brown sandy silt with gravel. Sand is fine to medium grained. Gravel is angular to blocky.</td> <td>Organic mat (tunora)</td> <td></td> <td>vvet</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	1251016058	0-4		Light brown sandy silt with gravel. Sand is fine to medium grained. Gravel is angular to blocky.	Organic mat (tunora)		vvet								
122M602B12.24Light brown silty gravel with sand. Sand is the grained. Gravel (30%) is platy, solt peers undisturbed. KG soil appears undisturbed. KG so	12SM60SB	4-12		sandstone, 1-4cm, occasional subblocky. Many roots. Abundant decomposing organics. Soft and loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	6392.38	38.07	< LOD	< LOD	< LOD	81.84	< LOD	< LOD
12SM60SB24-36siltstone, occasional standstone, 3-Gm, occasional blocky sandstone. 3-Gm, occasional blocky sandstone and site occasional blocky sandstone. 3-Gm, occasional blocky sandstone and site occasional blocky sandstone. 3-Gm, fresh incover blocky and stone grained. Firm.KG soilKG soilMoistMoist $7385.3$ $40.02$ < LOD<	12SM60SB	12-24		Light brown sitly gravel with sand. Sand is fine grained. Gravel is 3-7cm, angular to platy, sandstone with occasional siltstone. Sitl is organic rich, loamy. Light brown grav gravelly silt with sand. Sand is very fine to fine grained. Gravel (30%) is platy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	6999.18	39.52	28.35	< LOD	< LOD	96.31	< LOD	< LOD
12SM60SB $36.48$ Same as above, except with increasing gravel (40%)KG soilKG soilKG soil appears undisturbed. KG soil appears undisturbed. KGMoist $8061.36$ $42.84$ $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD $<$ LOD	12SM60SB	24-36		silistone, occasional sandstone, 3-6cm, occasional blocky sandstone. Silt is loess-like with more sand, none to low plasticity, soft.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	7385.3	40.02	< LOD	< LOD	< LOD	105.77	< LOD	< LOD
12SM60SB48-60Satire as above, except with intercenting stating class, low plasticity, class cosainally subblocky. Satire d casts, low plasticity, class cosainally subblocky.KG soilKG soilKG soilMoist527:5247.1< LOD< LOD< LOD74.73< LOD< th< td=""><td>12SM60SB</td><td>36-48</td><td></td><td>Same as above, except with increasing gravel (40%)</td><td>KG soil</td><td>KG soil appears undisturbed. KG soil appears non-mineralized.</td><td>Moist</td><td>8061.36</td><td>42.84</td><td>&lt; LOD</td><td>&lt; LOD</td><td>&lt; LOD</td><td>74.85</td><td>&lt; LOD</td><td>&lt; LOD</td></th<>	12SM60SB	36-48		Same as above, except with increasing gravel (40%)	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	8061.36	42.84	< LOD	< LOD	< LOD	74.85	< LOD	< LOD
12SM60SB       60-72       12SM60SB06       Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and siltstone, 1-4cm, fresh iron oxide 'facets', Sand is fine grained. Firm.       KG soil       KG soil       Moist       9812.88       63.87       < LOD       <	12SM60SB	48-60		stained clasts, low plasticity, clasts occasionally subblocky.	KG soil	soil appears undisturbed. KG	Moist	5272.52	47.1	< LOD	< LOD	< LOD	74.73	< LOD	< LOD
12SM60SB72-8412SM60SB07Dark prown to very dark gray stilly gravel with race sand. Gravel is nincky to angular with occasional subrounded, strong siltstone to friable black shale, 0.5-4cm, fresh facets. Refusal at MestKG soilKG soil appears undisturbed. KG soil appears non-mineralized.Moist10262.1375.8< LOD< LOD< LOD72.1< LOD<	12SM60SB	60-72	12SM60SB06	Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and siltstone, 1-4cm, fresh iron oxide 'facets'. Sand is fine grained. Firm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	9812.88	63.87	< LOD	< LOD	< LOD	70.23	< LOD	< LOD
12SM61SB       0-4       Organic mat (tundra)       Organic mat (tundra)       Organic mat (tundra)       Organic mat (tundra)       Image: Construction of the state o	12SM60SB	72-84	12SM60SB07	Date brown to very dark gray sitty gravel with trace sand. Cravel is blocky to angular with occasional subrounded, strong siltstone to friable black shale, 0.5-4cm, fresh facets. Refusal at 84" bgs as weathered bedrock transitions to bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	10262.13	75.8	< LOD	< LOD	< LOD	72.1	< LOD	< LOD
12SM61SB       4-10       Medium brown sandy silt. Gravel is 2cm - <8cm (observed platy clast in shovel hole to 8" width), angular - blocky - platy, sandstone - siltstone, friable siltstone. Sand is fine to medium grained, quartz. Silt is low plasticity and moist. Occasional organics.       KG soil       KG soil appears non-mineralized.       Moist       7461.26       43.22       < LOD       < LOD<	12SM61SB	0-4		Organic mat (tundra)	Organic mat (tundra)										
12SM61SB       10-16       12SM61SB01       Same as above, except with 40% gravel, 45% silt, and 15% sand.       KG soil       KG soil appears undisturbed. KG soil appears undisturbed. KG soil appears undisturbed. KG soil appears non-mineralized.       Moist       7721.38       42.66       < LOD	12SM61SB	4-10		Medium brown sandy silt. Gravel is 2cm - <8cm (observed platy clast in shovel hole to 8" width), angular - blocky - platy, sandstone - siltstone, friable siltstone. Sand is fine to medium grained, quartz. Silt is low plasticity and moist. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	7461.26	43.22	< LOD	< LOD	< LOD	97.64	< LOD	< LOD
12SM61SB       16-22       Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky, occasional platy, 1-10 cm, sandstone - siltstone. Trace organics.       KG soil       KG soil appears undisturbed. KG soil appears non-mineralized.       Moist       6545.6       42.73       < LOD       < LOD       100.32       < LOD	12SM61SB	10-16	12SM61SB01	Same as above, except with 40% gravel, 45% silt, and 15% sand.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	7721.38	42.66	< LOD	< LOD	< LOD	108.27	< LOD	< LOD
	12SM61SB	16-22		Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky, occasional platy, 1-10 cm, sandstone - siltstone. Trace organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	6545.6	42.73	< LOD	< LOD	< LOD	100.32	< LOD	< LOD

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Resu	lt (ppm)						
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Potassium	Rubidium	Scandium	Selenium	Silver	Strontium	Sulfur	Tellurium
12SM61SB	22-34		Light to medium brown gravelly silt with sand. Gravel is subangular to subblocky, occasional	KG soil	KG soil appears undisturbed. KG	Moist to very mois	8676.42	51.87	< LOD	< LOD	< LOD	107.67	< LOD	< LOD
12SM61SB	34-48		Same as above, except with increasing sand	KG soil	KG soil appears non-mineralized. KG soil appears undisturbed. KG	Moist to very mois	9433.58	64.5	< LOD	< LOD	< LOD	74.97	< LOD	< LOD
12SM61SB	48-60	12SM61SB05	Medium brown silty gravel with sand. Gravel (70%) is angular to platy, 0.5-7cm, sandstone, occasional siltstone, iron oxide weathering. Sand is very fine to fine grained. Refusal ay 60" bgs near weathered bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	7040.44	50.46	< LOD	< LOD	< LOD	68.08	< LOD	< LOD
12SM62SB	0-4		Organic mat (disturbed) Brown silt with sand Sand is very fine grained. Silt is low plasticity. Abundant organics and	Organic mat (disturbed)										
12SM62SB	4-16	12SM62SB01	roots.	organic matter		Dry to moist	6939.64	39.9	27.95	< LOD	< LOD	117.81	< LOD	< LOD
12SM62SB	16-22		sandstone and siltstone (Kuskokwim Group). No organics. Medium to low plasticity. 20% gravel.	Mixed loess/KG soil		Moist	6178.76	39.4	< LOD	< LOD	< LOD	86.17	< LOD	< LOD
12SM62SB 12SM62SB	22-32 32-36		Same as above, except with higher moisture and trace organics. No return due to rock.	Mixed loess/KG soil Mixed loess/KG soil		Moist Moist	6246.99	39.57	< LOD	< LOD	< LOD	88.29	< LOD	< LOD
12SM62SB	36-42		Same as above, except with increasing subangular to angular gravel up to 3" (3" auger diameter)	Mixed loess/KG soil			9896.98	50.74	< LOD	< LOD	< LOD	97.32	< LOD	< LOD
12SM62SB	42-48		Medium brown gravelly silt with sand. Sand is very fine to fine grained. Gravel is 1-4 cm, sub- blocky to angular, sandy siltstone to silty sandstone. Low plasticity. 30% gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	8147.91	54.42	< LOD	< LOD	< LOD	87.03	< LOD	< LOD
12SM62SB	48-54		Same as above, except with gravel occasionally sub-angular.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized	Moist	8434.63	49.72	< LOD	< LOD	< LOD	79	< LOD	< LOD
12SM62SB	54-60		Same as above, except with 40% gravel, slightly darker and slightly drier.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	7045.11	47.12	< LOD	< LOD	< LOD	103.34	< LOD	< LOD
12SM62SB	60-64		Same as above, except with increasing very fine to fine gray sand (15%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized	Dry to moist	6483.32	33.25	< LOD	< LOD	< LOD	60.65	< LOD	< LOD
12SM62SB	64-72	12SM62SB06	Medium brown silty gravel with sand. Sand is very fine to fine grained (10%). Gravel is 0.5-5 cm, angular to sub-angular to blocky, sandstone to siltstone, occasional veining (60%). Silt is medium brown, low plasticity (30%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized	Moist	8067.37	49.57	< LOD	< LOD	< LOD	92.42	< LOD	< LOD
12SM62SB	72-78		Same as above, except gravel is angular to blocky and increases to 70%.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized	Moist	7556.41	56.12	< LOD	< LOD	< LOD	104.66	< LOD	< LOD
12SM62SB	78-84		Same as above.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	10616.14	62.78	< LOD	< LOD	< LOD	125.02	< LOD	< LOD
12SM62SB	84-90		Same as above, except with less gravel (50%) and more silt (40%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	10555.82	84.49	< LOD	< LOD	< LOD	81.59	< LOD	< LOD
12SM62SB	90-96	12SM62SB08	Medium gray to medium brown gravelly silt with clay. Gravel is 1-3 cm, angular to blocky, sandstone and siltstone (brown to dark gray). Silt is medium plasticity, moist, and stiff. Appears to be in-situ weathering of black to dark gray siltstone/mudstone. Refusal at 96" (apparent hedrock)	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	15389.88	98.97	< LOD	< LOD	< LOD	87.55	< LOD	< LOD
12SM63SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM63SB	4-12	12SM63SB01	Medium brown sandy silt with trace gravel. Sand is fine grained. Silt is very sift, organic-rich, no plasticity. Trace gravel is subrounded, 1-3cm, sandstone.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations		Dry to moist	5576	30.31	< LOD	< LOD	< LOD	78.79	< LOD	< LOD
12SM63SB	12-24		Same as above, except sand (25%) is very fine to fine grained and gravel increases to 5%.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	4164.53	32.89	< LOD	< LOD	< LOD	93.86	< LOD	< LOD
12SM63SB	24-36		Same as above, except gravel increases to 15% and is subrounded to blocky sandstone. Increasing moisture, soft, grading to light gray, no organics.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist	4170.22	34.93	< LOD	< LOD	< LOD	72.4	< LOD	< LOD
12SM63SB	36-48		Same as above, except with increased moisture and low plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist to wet	4514.16	41.83	< LOD	< LOD	< LOD	79.51	< LOD	< LOD
12SM63SB	48-60		Medium gray to brown sandy silt with gravel. Gravel is 0.5-3cm, angular to blocky, sandstone and siltstone, orange staining. Sand is very fine to fine grained, possible quartz. Silt is soft to firm, clumpy, medium gray, no plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	5300.88	58.69	< LOD	< LOD	< LOD	53.6	< LOD	< LOD
12SM63SB	60-72	12SM63SB06	Same as above, except with increasing sand, strong orange staining throughout, and increased stiffness. Refusal at 72" bgs due to rocks.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.	KG soil not encountered in soil boring.	Dry to moist	3968.6	47.11	< LOD	< LOD	< LOD	49.57	< LOD	< LOD
12SM64SB	0-3	ĺ	Organic mat (disturbed)	Organic mat (disturbed)										

	Sample Depth	Laboratory			Comments Regarding Possible	Field Moisture	XRF Resu	lt (ppm)						
Station ID	(inches bas)	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Potassium	Rubidium	Scandium	Selenium	Silver	Strontium	Sulfur	Tellurium
12SM64SB	3-12		Dark brown sandy silt with trace gravel. Gravel is fine. Sand is very fine to fine grained. Silt is organic-rich, abundant roots, very soft, no plasticity, loamy.	Loess with abundant organic matter		Dry to moist	3553.8	31.44	< LOD	< LOD	< LOD	80.75	< LOD	< LOD
12SM64SB	12-24		Light gray to light brown silt with sand. Sand is very fine to fine grained. Silt is moderately most none to low-plasticity, soft abundant roots occasional organics. Grading to loss	Loess with abundant		Moist	4405.52	33.17	< LOD	< LOD	< LOD	117.16	< LOD	< LOD
12SM64SB	24-36		Same as above, except sand grading to very fine grained. No roots.	Loess		Moist	4709.05	36.43	< LOD	< LOD	< LOD	107.66	< LOD	< LOD
12SM64SB	36-48		Same as above, except no brown silt, occasional fine grained sand, increasing moisture, and	Loess		Moist to wet	5036.87	40.67	<lod< td=""><td>&lt; LOD</td><td><lod< td=""><td>119.6</td><td><lod< td=""><td>&lt; LOD</td></lod<></td></lod<></td></lod<>	< LOD	<lod< td=""><td>119.6</td><td><lod< td=""><td>&lt; LOD</td></lod<></td></lod<>	119.6	<lod< td=""><td>&lt; LOD</td></lod<>	< LOD
12SM64SB	48-60		low plasticity.	Loess		Moist to wet	5064.48	39 34	<1.0D	<100	<1.0D	108.78	<100	<1.0D
12SM64SB	60-72		Same as above, except with possible clay, medium plasticity, and less red brown staining along roots	Loess		Moist to wet	5146.2	44.52	33.3	< LOD	< LOD	115.85	< LOD	< LOD
12SM64SB	72-84		Same as above, except it appears to contain a paleo moss horizon. Refusal at 84" due to rocks.	Loess	Undisturbed KG soil likely present at bottom of soil boring, but no KG soil recovered in soil sample.	Wet	2601.35	35	< LOD	< LOD	< LOD	83.35	< LOD	< LOD
12SM65SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist								
12SM65SB	2-12		Medium olive brown silty sand. Silt 40%. Sand 60%, very fine to fine grained. Very loose. Organic rich with roots. Loamy.	Loess with abundant organic matter		Dry to moist	4226.11	37.2	< LOD	< LOD	< LOD	120.18	< LOD	< LOD
12SM65SB	12-24		Medium olive gray silty sand. 45% silt. 55% sand, very fine. Loose. Occasional roots. Occasional Fe staining. Trace organics.	Loess		Dry to moist	4936.71	38.99	32.84	< LOD	< LOD	109.31	< LOD	< LOD
12SM65SB	24-36		Same as above, except 40% silt, 60% sand, increasing brown color.	Loess		Dry to moist	4846.66	41.4	< LOD	< LOD	< LOD	129.28	< LOD	< LOD
12SM65SB	36-48		Same as above, except with occasional orange brown Fe-staining. Olive brown and orange gray sandy silt. Sand (40%) is very fine grained. Silt is soft to firm	Loess		Dry to moist	4405.75	36.72	< LOD	< LOD	< LOD	119.3	< LOD	< LOD
12SM65SB	48-60		none to low plasticity, and micaceous.	Loess		Moist	5129.77	38.8	< LOD	< LOD	< LOD	121.07	< LOD	< LOD
125M655B	50-72 72.84		Same as above, except low plasticity.	LOESS		Moist to wet	5253.18	38.69				122.01		
12SM65SB	84-96		Same as above, except increasing silt, and firm.	Loess		Moist to wet	5572.1	34.46	<lod< td=""><td>&lt; LOD</td><td>&lt; LOD</td><td>124.25</td><td><lod< td=""><td><lod< td=""></lod<></td></lod<></td></lod<>	< LOD	< LOD	124.25	<lod< td=""><td><lod< td=""></lod<></td></lod<>	<lod< td=""></lod<>
12SM65SB	96-108		Same as above, except it includes banding of red brown Fe-staining in fine grained sand showing mild concretion.	Loess		Moist to wet	4641.78	38.76	< LOD	< LOD	< LOD	101.9	< LOD	< LOD
12SM65SB	108-120		Same as above, except with paleo tundra (moss and roots)	Loess		Moist to wet	4844.95	39.29	< LOD	< LOD	< LOD	101.53	< LOD	< LOD
12SM65SB	120-132		Same as above, except with no paleo tundra	Loess		Moist	6013.56	43.84	< LOD	< LOD	< LOD	101.05	< LOD	< LOD
12SM65SB	132-144	12SM65SB12	Same as above, except grading to silty sand with gravel. Sand is fine to coarse grained, possible quartz. Gravel is sandstone with strong red brown to gray brown Fe-staining, 0.5-26cm, subangular to blocky. Stiff. Maximum length of hand auger 12' bgs.	Mixed loess/KG soil	undisturbed KG soil likely present at bottom of soil boring, but only mixed loess/KG soil recovered in soil sample. KG soil appears mineralized.	Moist	5210.43	48.21	< LOD	< LOD	< LOD	84.51	< LOD	< LOD
12SM66SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist								
12SM66SB	2-12		Light gray to olive gray sandy silt. Sand is very fine grained. Silt is soft, low moisture, no plasticity.	Loess		Dry to moist	4472.57	37.17	29.06	< LOD	< LOD	116.29	< LOD	< LOD
12SM66SB	12-24		12" to 16" same as above. 16" to 20" highly organic silt with decomposing organic matter, roots, paleosol. 20" to 24" olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess/Paleosol/Loess		Dry to moist	4059.11	35.36	< LOD	< LOD	< LOD	92.34	< LOD	< LOD
12SM66SB	24-36		Olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess		Dry to moist	4431.9	35.42	< LOD	< LOD	< LOD	114.68	< LOD	< LOD
12SM66SB	36-48		Same as above	Loess		Moist	4499 5588.88	40.13	<lod< td=""><td>&lt; LOD</td><td><lod< td=""><td>119.3</td><td>&lt; LOD</td><td>&lt; LOD</td></lod<></td></lod<>	< LOD	<lod< td=""><td>119.3</td><td>&lt; LOD</td><td>&lt; LOD</td></lod<>	119.3	< LOD	< LOD
12SM66SB	60-72		Same as above, except increasing molecule, low plasticity. 30 % sand. 70 % sinc.	Loess		Moist	5095.15	38.8	< LOD	< LOD	< LOD	121.28	< LOD	<lod< td=""></lod<>
12SM66SB	72-84		Same as above, except with increasing sand (40%) and occasional medium gravel.	Loess		Moist	5564.59	46.07	< LOD	< LOD	< LOD	116.04	< LOD	< LOD
12SM66SB	84-96		Same as above, except with decreasing very fine grained sand (30%).	Loess		Moist	4772.66	39.37	< LOD	< LOD	< LOD	124.87	< LOD	< LOD
12SM66SB	96-108		Same as above, except with decreasing very fine grained sand (10%), low to medium plasticity, and increased Fe-staining.	Loess		Moist	4929.6	40.1	< LOD	< LOD	< LOD	115.82	< LOD	< LOD
12SM66SB	108-120		Fe-stained medium brown concretions associated with sand grained sand (20%). Occasional	Loess		Moist	4850.59	37.57	< LOD	< LOD	< LOD	105.1	< LOD	< LOD
12SM66SB	120-132		Same as above, Except with increasing red brown Fe-staining. Medium plasticity.	Loess	Undisturbed KG soil likely present	Moist to wet	3235.12	35.27	< LOD	< LOD	< LOD	86.16	< LOD	< LOD
12SM66SB	132-144		Same as above, except with possible clay. Maximum length of hand auger 12' bgs.	Loess	below loess, but no KG soil encountered in soil boring.	Moist to wet	4606.31	38.4	< LOD	< LOD	< LOD	94.2	< LOD	< LOD
Note: XRF res Key: bgs cm Fe ID KG soil XRF < LOD ppm XRF	= feet = inches = Below grou = centimeter = iron = Identificatic = Kuskokwim = X-ray fluore = X-ray fluore	on-dried samples. Ind surface on I Group bedrock sescence spectrom the XRF instrumen nillion. secence	See Field Moisture Description for qualitative observations of moisture content of sample. derived soil netry nt level of detection											

	Sample Depth	Laboratory		Interneted Coll Turo	Comments Regarding Possible	Field Moisture	re XRF Result (ppm)							
Station ID	(inches	Sample ID	Field Lithological Description	Interpreted Soil Type	Usefulness for Background Soil Characterization	Description	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
12SM51SB	Dgs)		Organic mat (disturbed)	Organic mat (disturbed)									4	
12SM51SB	4-24		Medium gray gravelly silt with sand. Sand is very fine to medium grained. Gravel is angular to blocky to subblocky, 0.5-3cm, sandstone and siltstone. Silt is moist, soft to firm, no plasticity, constrained assession of the statistical sectors and siltstone.	KG soil	KG soil not demonstrably undisturbed. KG soil appears	Moist	< LOD	< LOD	3761.32	< LOD	< LOD	108.08	57.77	256.81
12SM51SB	24-48		Same as above, except less gravel and sand, low plasticity. Appears to be possible loess mixed with gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears	Moist	< LOD	< LOD	3486.31	< LOD	< LOD	< LOD	52.73	247.86
12SM51SB	48-72	12SM51SB06	Grading from above to light gray to brown gravelly silt. Gravel is 0.5-4cm, angular to subrounded sandstone (orange brown) and siltstone. Silt is firm, low plasticity, occasional Fe- staining, occasional roots and organics. Refusal at 72" bos due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.		10.28	< LOD	3983.36	< LOD	< LOD	107.84	54.43	256.59
12SM52SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM52SB	4-24	12SM52SB02	Brown sandy silt. Sand is very fine grained. Silt is very sift, no plasticity, organic-rich, loamy.	Indeterminate. Possible loess. Abundant organic material.			< LOD	< LOD	2808.1	< LOD	< LOD	111.23	51.63	233.51
12SM52SB	24-48		Same as above, except includes roots.	Indeterminate. Possible loess. Abundant organic material.			8.93	< LOD	2840.53	< LOD	< LOD	< LOD	57.76	284.44
12SM52SB	48-72		Light gray silt with sand. Sand is very fine grained. Silt is low to medium plasticity, low moisture, firm, root casts, Fe-staining.	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	3381.7	< LOD	< LOD	< LOD	58.22	290.93
12SM52SB	72-96		Same as above	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	3126.51	< LOD	< LOD	< LOD	42.7	349.5
12SM52SB	96-120	12SM52SB10	Olive gray to dark gray with occasional brown mottling (Fe-staining) gravely silt with sand. Gravel is angular to subrounded, fine to 2cm sandstone and siltstone. Sand is fine grained. Silt is firm to stiff, low plasticity, moist. Possible grading of loess to KG Group soil.	Indeterminate. Possible mixed loess and KG soil.		Moist	< LOD	< LOD	3885.24	< LOD	12.51	134.11	69.33	249.34
12SM52SB	120-132	12SM52SB11	Dark gray gravel with silt and sand. Sand is medium to coarse grained. Gravel is angular to blocky altered sandstone and siltstone, fine to 3cm, Fe-staining, occasional calcareous mineralization. Low moisture.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	10.36	< LOD	2715.29	< LOD	< LOD	< LOD	114.5	172.88
12SM53SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)									'	
12SM53SB	4-24		Olive gray silt. Very soft. Very low moisture. No plasticity. Organic-rich. Roots. Loamy.	loess. Abundant organic material.		Dry to moist	8.84	< LOD	2884.94	< LOD	< LOD	< LOD	37.96	258.93
12SM53SB	24-48		Same as above, except slightly micaceous and less organics.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	15.14	< LOD	2722.28	< LOD	< LOD	< LOD	47.83	265.49
12SM53SB	48-72		Medium gray to olive gray silt with trace sand. Sand is very fine grained. Silt is firm, occasional Fe-staining, low plasticity, low moisture.	Indeterminate. Possible loess.		Dry to moist	11.04	< LOD	3199.71	< LOD	< LOD	124.08	66.95	284.38
12SM53SB	72-96		Same as above, except increased moisture.	Indeterminate. Possible loess.		Moist	< LOD	< LOD	3245.72	< LOD	< LOD	106.83	50.56	256.49
12SM53SB	96-120	12SM53SB10	Dark gray and brown with orange Fe-staining gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-4cm, subrounded to subblocky sandstone and siltstone, occasional red- brown sand grains. Silt is firm and moist. Refusal at 120" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	< LOD	< LOD	3016.65	< LOD	< LOD	155.81	69.92	194.14
12SM54SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM54SB	4-24		Medium brown to olive brown silt. Very soft, no plasticity, low moisture, organic-rich, occasional roots, loamy.	Indeterminate. Possible loess. Abundant organic material.		Dry to moist	< LOD	< LOD	2512.75	< LOD	< LOD	90.88	54.96	264.4
12SM54SB	24-48		Olive gray with occasional brown Fe-staining silt with trace sand. Sand is very fine. Low plasticity, firm, low moisture, Fe-staining with organics.	Indeterminate. Possible loess.		Dry to moist								
12SM54SB	48-72		Same as above	Indeterminate. Possible loess.		Dry to moist	< LOD	< LOD	3377.2	< LOD	< LOD	< LOD	48.34	305.7
12SM54SB	72-96		Same as above, except with root casts and bubbles, increased moisture and plasticity.	Indeterminate. Possible loess.		Moist	< LOD	< LOD	3225.26	< LOD	< LOD	129.39	42.59	251.9
12SM54SB	84-120		Same as above, except with trace gravel to 2cm and increased moisture.	Mixed loess/KG soil		Moist	< LOD	< LOD	3086.36	< LOD	< LOD	< LOD	52.08	288.58
12SM54SB	120-126	12SM54SB11	Olive gray gravelly silt with sand. Sand is fine to medium grained. Gravel is 1-3 cm, angular to rounded sandstone and siltstone, altered, occasional calcareous mineralization, occasional Fe- stained sand grains. Silt is firm, low plasticity, moist. Refusal at 126" bgs due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Moist	10.92	< LOD	3367.56	< LOD	< LOD	131.13	91.38	206.51
12SM55SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM55SB	2-12		Olive brown sandy silt. Sand (30%) is very fine to fine grained. Silt is soft, no plasticity, moist, with organics and roots.	Indeterminate. Possible loess. Abundant organic material.		Moist	< LOD	< LOD	3233.64	< LOD	< LOD	99.2	44.4	270.27
12SM55SB	12-24		Same as above, except with occasional Fe-staining and trace gravel (2-3cm).	Mixed loess/KG soil		Moist	< LOD	< LOD	3225.25	< LOD	< LOD	< LOD	43.26	224.94
12SM55SB	24-36		Olive brown gray gravelly silty sand. Gravel (30%) is fine to 3cm, angular to blocky sandstone and siltstone. Sand (40%) is very fine to medium grained. 30% silt. Trace organics.	Mixed loess/KG soil		Moist	< LOD	< LOD	2585.3	< LOD	< LOD	109.33	47.94	268.5
12SM55SB	36-48	12SM55SB04	Transition from above to sandy gravelly silt. Gravel is fine to 4cm platy siltstone and angular to blocky sandstone. Sand is fine to coarse grained. Silt is firm with low plasticity. Occasional organics. Occasional orange brown Fe-staining associated with sand grains.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	11.06	< LOD	1694.45	< LOD	< LOD	107.32	78.91	171.01
12SM55SB	48-60		Same as above, except with more larger sized gravel, silt has low to moderate plasticity, and increased Fe-staining.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	2789.05	< LOD	< LOD	107.01	65.49	182.25
12SM55SB	60-66		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	14.67	< LOD	2305.17	< LOD	< LOD	162.75	102.2	179.18

Description         Output Description         Description <th>04-41- x ID</th> <th rowspan="2">Sample Depth (inches bas)</th> <th>Laboratory</th> <th></th> <th>Interpreted Soil Type</th> <th>Comments Regarding Possible</th> <th>ble Soil Field Moisture</th> <th colspan="9">re XRF Result (ppm)</th>	04-41- x ID	Sample Depth (inches bas)	Laboratory		Interpreted Soil Type	Comments Regarding Possible	ble Soil Field Moisture	re XRF Result (ppm)								
No.         Object of parts allowed by allow bands by allow bands by allow bands by allow bands by allow bands by allow bands by allow bands by allowed by	Station ID		Sample ID	Field Lithological Description	Interpreted Soil Type	Characterization	Description	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium	
No.         Index out yes in some offer members where in the control c	12SM55SB	66-72		Dark olive gray to brown silty gravelly sand. Sand is fine to medium grained. Silt has low plasticity. Gravel is weathered bedrock in 1-6cm clasts of hydro altered sandstone (strong Fe- staining) and siltstone. Breaking on Fe-stained facets. Some calcareous mineralizations. Angular and blocky.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	2283.56	< LOD	< LOD	98.99	88.25	176.52	
Part         Example of a part of a constrainty         Date of a part of a constrainty         Part         Not of a constrainty         Most         Part	12SM55SB	72-78		Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	2926.65	< LOD	< LOD	145.78	65.19	132.73	
Dimension         Object and alloaded         Object and alloaded <t< td=""><td>12SM55SB</td><td>78-84</td><td>12SM55SB07</td><td>Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale. Refusal at 84" on rocks, likely KG Group Bedrock.</td><td>KG soil</td><td>KG soil not demonstrably undisturbed. KG soil appears mineralized.</td><td>Moist</td><td>10.59</td><td>&lt; LOD</td><td>1573.11</td><td>&lt; LOD</td><td>&lt; LOD</td><td>105.96</td><td>79.26</td><td>134.21</td></t<>	12SM55SB	78-84	12SM55SB07	Dark olive gray with occasional black sandy gravel with silt. Gravel is weathered bedrock in 1- 3cm clasts of hydro altered sandstone (strong Fe-staining) and siltstone. Breaking on Fe- stained facets. Some calcareous mineralizations. Silt is firm to hard, low plasticity, moist with very fine sand grains and black flecks. Silt appears to be in situ weathering of black friable shale. Refusal at 84" on rocks, likely KG Group Bedrock.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	10.59	< LOD	1573.11	< LOD	< LOD	105.96	79.26	134.21	
Exponent         Subset         Interaction operation operatindef aperatecoperation operation operatindef aperation operatind	12SM56SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)											
1200000         2-40         Mattle gay is may gracely all fibral 15.0m alguar auxiliants all intermative models and lines. It is an alguar auxiliant all intermative models and lines. It is an alguar auxiliant all intermative models.         Model and particle models.	12SM56SB	3-24		Medium brown silt with sand. Sand is very fine grained. Silt is has moderate plasticity, moist, occasional organics.	loess. Abundant organic material.			< LOD	< LOD	3065.71	< LOD	< LOD	< LOD	28.54	247.58	
40-64         V12.080680         More shy genes multi sends as of situations a distance show that sends as of situations and situation and situations and situation and situations and situati	12SM56SB	24-48		Medium gray to olive gray gravelly silt. Gravel is 1-3cm angular sandstone and siltstone. Silt has medium plasticity, moist, soft.	Indeterminate. Possible mixed Loess/KG soil			10.22	< LOD	3638.52	< LOD	< LOD	111.48	68.85	235.78	
Construction         Construction	12SM56SB	48-54	12SM56SB05	Brown silty gravel with sand. Sand is medium grained. Gravel is 0.5-5cm, subrounded to angular sandstone and siltstone. Silt has medium plasticity and is moist.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.		7.89	< LOD	1832.97	< LOD	< LOD	< LOD	27.39	147.51	
1284/378         4-44         Netwer hand space from \$2 - 2m. register is at reactions. State of the space from \$2 - 2m. register is at reactions. The space from \$2 - 2m. register is at reactin \$2 - 2m. register is at reactin \$2 - 2m. register is at react	12SM57SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)		İ									
12842758         2.4.4         Light or yun for mouth momental with the stand and grant. Stand is warp were standing, from were standing, from were standing, from were standing. The standing, from were standing, from were standing, from were standing, from were standing, from were standing. The standing, from were standing,	12SM57SB	4-24		Medium brown sandy silt with gravel. Gravel is 2-4cm, angular to subrounded sandstone. Sand is very fine grained. Silt is wet, low plasticity, occasional organics and roots.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Wet	< LOD	< LOD	3616.87	< LOD	< LOD	106.23	35.65	252.52	
23:43:758         44-60         12:23:45780         Same a store, except with increased graver. Reheat at 60° due to grave.         KG and referencesschy unduktion. Social gravers and there. Social (Scial gravers and there)         Vicion         icion         Vicion	12SM57SB	24-48		Light gray to medium brown silt with sand and gravel. Sand is very fine grained. Gravel is 1- 2cm, angular to subrounded sandstone. Silt has brown Fe-staining, firm, low moisture, low plasticity, micaceous.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Dry to moist	< LOD	< LOD	3525.24	< LOD	< LOD	< LOD	43.68	275.7	
12280888         0-12         Organ methods         Oppose methods         KG out papers methods         Mode         No.	12SM57SB	48-60	12SM57SB05	Same as above, except with increased gravel. Refusal at 60" due to gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears non- mineralized.	Dry to moist	< LOD	< LOD	3936.11	< LOD	< LOD	< LOD	69.36	237.5	
1224         1224/1928         Medua to non sam/y all will giver, Gravel and the let be 2, multicular and the let be 2,	12SM58SB	0-12		Organic mat (tundra)	Organic mat (tundra)											
123M388         24.48         new plane. Units the grand. Site verse was regioned in stability. Perchets regioned in stability. Perchets regioned in stability. Perchets	12SM58SB	12-24	12SM58SB02	Medium brown sandy silt with gravel. Gravel is fine to 2 cm, subrounded sandstone. Sand is very fine to fine grained. Silt is very moist, very soft, no plasticity, organic-rich and roots. Medium of the brown candy silt with gravel. Canvel is fine to 2 cm, every browned a candidate so. Sand	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	8.21	< LOD	3745.65	< LOD	< LOD	< LOD	48.74	245.75	
123M358         4-60         Same as showe         Same as showe         KG sol         KG sol         KG sol         Very wet         4.64         LOD         44.00         LOD         41.00         41.0	12SM58SB	24-48		is very fine to fine grained. Silt is very wet, very soft, no plasticity. Perched water layer flooding borehole.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	8.07	< LOD	3731.11	< LOD	< LOD	144.65	54.27	260.98	
IZ5M588         04-2         Same a above, except with increased 14-or gravel (20%). Refusal 122' due to gravel.         KG soil         Mol appears non-minicalized.         14-22         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0         <10.0	12SM58SB	48-66		Same as above	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Very wet	8.45	< LOD	3442.25	< LOD	< LOD	< LOD	53.12	221.5	
122MISSB0-4Organic mat (Lundar)Organic mat (Lundar)Organic mat (Lundar)Moist $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$	12SM58SB	66-72		Same as above, except with increased 1-4cm gravel (30%). Refusal at 72" due to gravel.	KG soil	soil appears non-mineralized.		14.22	< LOD	3623.45	< LOD	< LOD	110.53	68.59	217.86	
123M398         4-12         123M3980         Modet         <100         <100         322.10         <100         <100         322.10         <100         <100         322.10         <100         <100         322.10         <100         <100         322.10         <100         <100         <100         322.10         <100         <100         <100         322.10         <100         <100         <100         322.10         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100        <100        <100 <th< td=""><td>12SM59SB</td><td>0-4</td><td></td><td>Organic mat (tundra)</td><td>Organic mat (tundra)</td><td></td><td>Moist</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	12SM59SB	0-4		Organic mat (tundra)	Organic mat (tundra)		Moist									
12:8M5958         12:24         International parent	12SM59SB	4-12	12SM59SB01	Medium to dark brown silt with gravel. Very soft. Organic-rich. No plasticity. Loamy. Gravel	KG soil	KG soil appears undisturbed. KG	Moist	< LOD	< LOD	3292.16	< LOD	< LOD	146.53	34.61	211.8	
125M69824-36Same as above, except gravel is 5-8cm, sit is loss-ske, and increasing moisture.KG soilKG soilKG soilMoist to wet< LOD $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < LOD$ $< < < LOD$ $< < < LOD$ $< < < < LOD$ $< < < < < < < < < < < < < < < < < < < $	12SM59SB	12-24		Medium brown gravelly silt. Gravel (40%) is 3-7cm, angular to blocky sandstone and siltstone. Silt is soft to firm, none to low plasticity. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	3303.54	< LOD	< LOD	< LOD	51.61	278.39	
125M95839-48No recoveryKG soilNo site appears non-intentional subjects non-	12SM59SB	24-36		Same as above, except gravel is 5-8cm, silt is loess-like, and increasing moisture.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to wet	< LOD	< LOD	3406.43	< LOD	< LOD	< LOD	37.71	299.3	
125M958         48-60         125M9586         48-60         125M9586         48-60         125M9586         48-60         125M9586         48-60         125M9586         48-60         125M9586         48-60         CLDD         2649.66         < CLDD         2649.66         < CLDD         200         43.01         234.0	12SM59SB	36-48		No recovery Light gray (occasional brown mottling) silt with trace gravel. Gravel is 1-3cm, angular	KG soil	soil appears undisturbed. KG	Moist to wet	10.04	< LOD	3283.84	< LOD	< LOD	167.55	54.16	260.81	
125MeOSB0-4Organic mat (lundra)Organic mat (lundra)WetImage: Constraint of the constraint of t	12SM59SB	48-60	12SM59SB05	sandstone. Silt is low to medium plasticity, moist, soft to firm, brown/rust mottling appears to be root casts. Trace organics. Refusal at 60" due to large rock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	2649.66	< LOD	< LOD	90	43.01	234.44	
12SM60SB4-12Logit form safely safe to ball of the original to block, and ball to block, and and ball to block, and and ball to block, and and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block, and ball to block to an all to block to and ball to block, and ball to block to and ball to block, and ball	12SM60SB	0-4		Organic mat (tundra)	Organic mat (tundra)		Wet									
12SM60SB12-24Light brown silly gravel with sand. Sand is fine grained. Gravel is 3-2cm, angular to platy, sandstone with coacsional silts one coacsional sindstore, Silt is organic rich, loamy.KG soilKG soilKG soilMoist< LOD< LOD< LOD< LOD< LOD118.5868.61336.12SM60SB24-36Same as above, except with increasing gravel (40%)KG soilKG soilKG soilMoist11.36< LOD	12SM60SB	4-12		sandstone, 1-4cm, occasional subblocky. Many roots. Abundant decomposing organics. Soft and loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	2982.16	< LOD	< LOD	96.62	37.93	267.54	
12SM60SB24-36Control of a graver and the status and the status control (control spray, sitter) sitter, control (control spray, sitter, soft.KG soil appears undisturbed. KG soil appears undisturbed. KG soil appears undisturbed. KG 	12SM60SB	12-24		Light brown silty gravel with sand. Sand is fine grained. Gravel is 3-7cm, angular to platy, sandstone with occasional siltstone. Silt is organic rich, loamy.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	2738.69	< LOD	< LOD	118.58	68.61	336.38	
12SM60SB $36-48$ Same as above, except with increasing gravel (40%)KG soilKG soilKG soil appears undisturbed. KG soil appears undisturbed. KGMoist< LOD< LOD2927.28< LOD13.05126.6262.23284.12SM60SB48-60Same as above, except with increasing sand. Loess-like silt sight gray with occasional red stained clasts, low plasticity, clasts occasionally subblocky. satined siltsone, 1-4cm, fresh iron oxide 'facets'. Sand appears undisturbed. KG 	12SM60SB	24-36		suitstone, occasional sandstone, 3-6cm, occasional blocky sandstone. Silt is loess-like with more sand, none to low plasticity, soft.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	11.36	< LOD	3303.15	< LOD	< LOD	107.02	49.64	390.57	
12SM60SB48-60Same as above, except with mice same site signify gavel, with same. Successional real stained clasts, low plasticity, clasts occasionally sublocky.KG soil soil appears undisturbed. KG soil appears undisturbed. KG 	12SM60SB	36-48		Same as above, except with increasing gravel (40%)	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	2927.28	< LOD	13.05	126.62	62.23	284.57	
12SM60SB       60-72       12SM60SB06       Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and siltsone, 1-4cm, fresh iron oxide 'facets'. Sand is fine grained. Firm.       KG soil       KG soil appears non-mineralized.       Moist       10.68       < LOD       2856.86       < LOD       < LOD       137.82       117       164.         12SM60SB       72-84       12SM60SB07       Dark brown to very dark gray silty gravel with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is blocky to angular with race sand. Gravel is cancel. Solid appears non-mineralized.       Moist       13.87       CLOD       2917.6       CLOD       4 LOD       125.81       98.6       150.         12SM61SB       0-4       Organic mat (tundra)       Organic mat (tundra)       Organic mat (tundra)       Organic mat (tundra)       Image: Gravel is blocky play, sandstone - silistone, friable silistone. Sand is fine oreindum       KG	12SM60SB	48-60		stained clasts, low plasticity, clasts occasionally subblocky.	KG soil	soil appears undisturbed. KG	Moist	< LOD	< LOD	2098.05	< LOD	< LOD	106.07	90.06	180.07	
12SM60SB72-8412SM60SB07Lark forwing overy dark grass sing gravel with race sand. Gravel is blocky to angular with occasional subrounded, strong silts one to friable black shale, 0.5-4cm, fresh facets. Refusal at MestKG soilKG soil appears undisturbed. KG soil appears non-mineralized.Moist13.87< LOD2917.6< LOD< LOD125.8198.6150.12SM60SB070crganic mat (tundra)Organic mat (tundra)Organic mat (tundra)Organic mat (tundra) <td>12SM60SB</td> <td>60-72</td> <td>12SM60SB06</td> <td>Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and siltstone, 1-4cm, fresh iron oxide 'facets'. Sand is fine grained. Firm.</br></td> <td>KG soil</td> <td>KG soil appears undisturbed. KG soil appears non-mineralized.</td> <td>Moist</td> <td>10.68</td> <td>&lt; LOD</td> <td>2856.86</td> <td>&lt; LOD</td> <td>&lt; LOD</td> <td>137.82</td> <td>117</td> <td>164.08</td>	12SM60SB	60-72	12SM60SB06	Brown to dark brown silty gravel with sand. Gravel is angular to subblocky sandstone and 	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	10.68	< LOD	2856.86	< LOD	< LOD	137.82	117	164.08	
12SM61SB       0-4       Organic mat (tundra)       Organic mat (tundra)       Organic mat (tundra)       Image: Construct (t	12SM60SB	72-84	12SM60SB07	During our powery dark gray sing gravel with trace sand. Gravel is blocky to angular with occasional subrounded, strong siltstone to friable black shale, 0.5-4cm, fresh facets. Refusal at 84° bgs as weathered bedrock transitions to bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	13.87	< LOD	2917.6	< LOD	< LOD	125.81	98.6	150.73	
12SM61SB       4-10       Medium brown sandy silt. Gravel is 2cm - <8cm (observed platy clast in shovel hole to 8" width), angular - blocky - platy, sandstone - siltstone, friable siltstone. Sand is fine to medium grained, quartz. Silt is low plasticity and moist. Occasional organics.       KG soil       KG soil       Moist       9.03 <lod< th="">       3684.65       <lod< th=""> <lod< th="">       4.10       4.10         12SM61SB       10-16       12SM61SB01       Same as above, except with 40% gravel, 45% silt, and 15% sand.       KG soil       KG soil       Moist       9.03       <lod< td="">       3684.65       <lod< td=""> <lod< td="">       49.1       339.2         12SM61SB       10-16       12SM61SB01       Same as above, except with 40% gravel, 45% silt, and 15% sand.       KG soil       KG soil       Moist       10.77       <lod< td="">       3760.9       <lod< td=""> <lod< td="">       54.5       340.2         12SM61SB       16-22       Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky,       KG soil       KG soil appears undisturbed. KG       Moist       <lod< td=""> <lod< td=""> <lod< td=""> <lod< td=""> <lod< td=""> <lod< td="">       49.1       339.2         12SM61SB       16-22       Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky,       KG soil appears undisturbed. KG       Moist       <lod< td=""> <lod< td=""> <lod< td=""> <l< td=""><td>12SM61SB</td><td>0-4</td><td></td><td>Organic mat (tundra)</td><td>Organic mat (tundra)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></l<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<></lod<>	12SM61SB	0-4		Organic mat (tundra)	Organic mat (tundra)											
12SM61SB       10-16       12SM61SB01       Same as above, except with 40% gravel, 45% silt, and 15% sand.       KG soil       KG soil appears undisturbed. KG soil appears non-mineralized.       Moist       10.77       < LOD       3760.9       < LOD       < LOD       54.5       340.         12SM61SB       16-22       Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky,       KG soil       KG soil appears undisturbed. KG       Moist       < LOD	12SM61SB	4-10		Medium brown sandy silt. Gravel is 2cm - <8cm (observed platy clast in shovel hole to 8" width), angular - blocky - platy, sandstone - siltstone, friable siltstone. Sand is fine to medium grained, guartz. Silt is low plasticity and moist. Occasional organics.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	9.03	< LOD	3684.65	< LOD	< LOD	< LOD	49.1	339.84	
12SM61SB 16-22 Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky, KG soil Moist < 10D 3249.62 < 10D 3249.62 < 10D 138.93 69.48 255.	12SM61SB	10-16	12SM61SB01	Same as above, except with 40% gravel, 45% silt, and 15% sand.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	10.77	< LOD	3760.9	< LOD	< LOD	< LOD	54.5	340.15	
	12SM61SB	16-22		Medium brown silty gravel with sand. Sand is fine grained. Gravel is subangular to subblocky,	KG soil	KG soil appears undisturbed. KG	Moist	< LOD	< LOD	3249.62	< LOD	< LOD	138.93	69.48	255.49	

Station ID Depth		Laboratory	Eisld Lithelesies Description	Interpreted Soil Type	Comments Regarding Possible	Field Moisture	XRF Result	(ppm)						
Station ID	(inches	Sample ID		interpreted Soli Type	Characterization	Description	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
12SM61SB	22-34		Light to medium brown gravelly silt with sand. Gravel is subangular to subblocky, occasional platy, 1-10 cm, sandstone - siltstone. Silt is low plasticity and firm.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist to very moist	< LOD	< LOD	3207.08	< LOD	< LOD	< LOD	61.43	263.9
12SM61SB	34-48		Same as above, except with increasing sand	KG soil	KG soil appears undisturbed. KG	Moist to very moist	< LOD	< LOD	3533.57	< LOD	< LOD	145.88	85.06	224.27
12SM61SB	48-60	12SM61SB05	Medium brown silty gravel with sand. Gravel (70%) is angular to platy, 0.5-7cm, sandstone, occasional siltstone, iron oxide weathering. Sand is very fine to fine grained. Refusal ay 60" bgs near weathered bedrock.	KG soil	KG soil appears undisturbed. KG soil appears non-mineralized.	Moist	< LOD	< LOD	2413.13	< LOD	14.62	< LOD	71.57	196.65
12SM62SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)										
12SM62SB	4-16	12SM62SB01	roots.	organic matter		Dry to moist	8.84	< LOD	2442.44	< LOD	< LOD	< LOD	42.19	310.57
12SM62SB	16-22		Light brown gravelly silt with sand. Sand is very fine grained. Gravel is 1-3 cm subangular sandstone and siltstone (Kuskokwim Group). No organics. Medium to low plasticity. 20% gravel.	Mixed loess/KG soil		Moist	12.73	< LOD	3384.34	< LOD	< LOD	135.09	56.2	317
12SM62SB 12SM62SB	22-32 32-36		Same as above, except with higher moisture and trace organics.	Mixed loess/KG soil Mixed loess/KG soil		Moist Moist	9.68	< LOD	2872.94	< LOD	< LOD	110.31	45.68	266.76
12SM62SB	36-42		Same as above, except with increasing subangular to angular gravel up to 3" (3" auger	Mixed loess/KG soil		indict	< LOD	< LOD	3554.04	< LOD	< LOD	145.06	73.98	219.78
12SM62SB	42-48		Medium brown gravelly silt with sand. Sand is very fine to fine grained. Gravel is 1-4 cm, sub- blocky to angular, sandy siltstone to silty sandstone. Low plasticity. 30% gravel.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	2992.46	< LOD	< LOD	159.69	90.33	213.14
12SM62SB	48-54		Same as above, except with gravel occasionally sub-angular.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	3466.88	< LOD	< LOD	142.62	94.91	204.21
12SM62SB	54-60		Same as above, except with 40% gravel, slightly darker and slightly drier.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	11.19	< LOD	2967.54	< LOD	< LOD	139.7	83.17	240.57
12SM62SB	60-64		Same as above, except with increasing very fine to fine gray sand (15%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Dry to moist	< LOD	< LOD	3474.14	< LOD	< LOD	118.72	72.2	176.72
12SM62SB	64-72	12SM62SB06	Medium brown silty gravel with sand. Sand is very fine to fine grained (10%). Gravel is 0.5-5 cm, angular to sub-angular to blocky, sandstone to siltstone, occasional veining (60%). Silt is medium brown, low plasticity (30%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	9.76	< LOD	3057.67	< LOD	< LOD	111.99	95.13	179.42
12SM62SB	72-78		Same as above, except gravel is angular to blocky and increases to 70%.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	2818.94	< LOD	< LOD	< LOD	112.3	187.16
12SM62SB	78-84		Same as above.	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	10.85	< LOD	3668.35	< LOD	< LOD	149.36	104.9	190.94
12SM62SB	84-90		Same as above, except with less gravel (50%) and more silt (40%).	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	< LOD	< LOD	3576.39	< LOD	< LOD	200.08	152.3	184.91
12SM62SB	90-96	12SM62SB08	Medium gray to medium brown gravelly silt with clay. Gravel is 1-3 cm, angular to blocky, sandstone and siltstone (brown to dark gray). Silt is medium plasticity, moist, and stiff. Appears to be in-situ weathering of black to dark gray siltstone/mudstone. Refusal at 96" (apparent bedrock)	KG soil	KG soil not demonstrably undisturbed. KG soil appears mineralized.	Moist	11.76	< LOD	4237.63	< LOD	< LOD	237.77	113.6	203.28
12SM63SB	0-4		Organic mat (disturbed)	Organic mat (disturbed)		Moist								
12SM63SB	4-12	12SM63SB01	Medium brown sandy silt with trace gravel. Sand is fine grained. Silt is very sift, organic-rich, no plasticity. Trace gravel is subrounded, 1-3cm, sandstone.	to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations		Dry to moist	8.49	< LOD	2309.11	< LOD	< LOD	< LOD	26.38	193.82
12SM63SB	12-24		Same as above, except sand (25%) is very fine to fine grained and gravel increases to 5%.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	< LOD	< LOD	2563.72	< LOD	< LOD	< LOD	38.59	262.74
12SM63SB	24-36		Same as above, except gravel increases to 15% and is subrounded to blocky sandstone. Increasing moisture, soft, grading to light gray, no organics.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist	< LOD	< LOD	15214.07	< LOD	< LOD	< LOD	25.29	246.45
12SM63SB	36-48		Same as above, except with increased moisture and low plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Moist to wet	< LOD	< LOD	14944.78	< LOD	< LOD	< LOD	37.72	294.25
12SM63SB	48-60		Medium gray to brown sandy silt with gravel. Gravel is 0.5-3cm, angular to blocky, sandstone and siltstone, orange staining. Sand is very fine to fine grained, possible quartz. Silt is soft to firm, clumpy, medium gray, no plasticity.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.		Dry to moist	11.72	< LOD	2663.71	< LOD	< LOD	135.79	75.51	174.15
12SM63SB	60-72	12SM63SB06	Same as above, except with increasing sand, strong orange staining throughout, and increased stiffness. Refusal at 72" bgs due to rocks.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.	KG soil not encountered in soil boring.	Dry to moist	< LOD	< LOD	1615.11	< LOD	< LOD	101.88	81.21	160.89
12SM64SB	0-3		Organic mat (disturbed)	Organic mat (disturbed)										

	Sample Depth	Laboratory		Interpreted Soil Type	Comments Regarding Possible	Field Moisture	XRF Result (ppm)								
Station ID	(inches bqs)	Sample ID	Field Lithological Description		Usefulness for Background Soil Characterization	Description	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium	
12SM64SB	3-12		Dark brown sandy silt with trace gravel. Gravel is fine. Sand is very fine to fine grained. Silt is organic-rich, abundant roots, very soft, no plasticity, loamy.	Loess with abundant organic matter		Dry to moist	< LOD	< LOD	2014.55	< LOD	< LOD	< LOD	24.85	205.05	
12SM64SB	12-24		Light gray to light brown silt with sand. Sand is very fine to fine grained. Silt is moderately moist, none to low-plasticity, soft, abundant roots, occasional organics, Grading to loss.	Loess with abundant		Moist	9.39	< LOD	2416.13	< LOD	< LOD	< LOD	52.7	270.21	
12SM64SB	24-36		Same as above, except sand grading to very fine grained. No roots.	Loess		Moist	< LOD	< LOD	2499.92	< LOD	< LOD	< LOD	39.89	268.66	
12SM64SB	36-48		Same as above, except no brown silt, occasional fine grained sand, increasing moisture, and	Loess		Moist to wet	8	< LOD	2262.87	< LOD	< LOD	< LOD	48.99	254.4	
12SM64SB	48-60		low plasticity. Light gray to light olive silt with sand. Low plasticity. Firm, Red brown staining along roots.	Loess		Moist to wet	< LOD	< LOD	2477.41	< LOD	< LOD	97.47	32.97	286.72	
12SM64SB	60-72		Same as above, except with possible clay, medium plasticity, and less red brown staining along roots.	Loess		Moist to wet	9.99	< LOD	2546.98	< LOD	< LOD	105.5	43.22	272.19	
12SM64SB	72-84		Same as above, except it appears to contain a paleo moss horizon. Refusal at 84" due to rocks.	Loess	Undisturbed KG soil likely present at bottom of soil boring, but no KG soil recovered in soil sample.	Wet	< LOD	< LOD	1460.38	< LOD	< LOD	< LOD	39.25	219.74	
12SM65SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist									
12SM65SB	2-12		Medium olive brown silty sand. Silt 40%. Sand 60%, very fine to fine grained. Very loose. Organic rich with roots. Loamy.	Loess with abundant organic matter		Dry to moist	< LOD	< LOD	2611.16	< LOD	< LOD	100	40.18	415.28	
12SM65SB	12-24		Medium olive gray silty sand. 45% silt. 55% sand, very fine. Loose. Occasional roots. Occasional Fe staining. Trace organics.	Loess		Dry to moist	7.99	< LOD	2209.15	< LOD	< LOD	93.38	38.31	255.21	
12SM65SB	24-36		Same as above, except 40% silt, 60% sand, increasing brown color.	Loess		Dry to moist	10.91	< LOD	2046.33	< LOD	< LOD	< LOD	48.82	272.15	
12SM65SB	36-48		Same as above, except with occasional orange brown Fe-staining.	Loess		Dry to moist	< LOD	< LOD	2256.68	< LOD	< LOD	< LOD	40.49	274.7	
12SM65SB	48-60		Olive brown and orange gray sandy silt. Sand (40%) is very fine grained. Silt is soft to firm, none to low plasticity, and micaceous.	Loess		Moist	9.04	< LOD	2463.25	< LOD	< LOD	91.46	52.21	259.85	
12SM65SB	60-72		Same as above, except low plasticity.	Loess		Moist to wet	< LOD	< LOD	2828.4	< LOD	< LOD	< LOD	40.28	287.95	
12SM65SB	72-84		Same as above, except there is a 1-2" lens of medium grained sand.	Loess		Moist to wet	8.11	< LOD	2034.57	< LOD	< LOD	101.61	42.1	214.78	
12SM65SB	84-96		Same as above, except increasing silt, and firm.	Loess		Moist to wet	9.19	< LOD	2617.72	< LOD	< LOD	< LOD	48.49	261.12	
12SM65SB	96-108		Same as above, except it includes banding of red brown Fe-staining in fine grained sand showing mild concretion.	Loess		Moist to wet	< LOD	< LOD	2438.63	< LOD	< LOD	130.7	41.86	308.02	
12SM65SB	108-120		Same as above, except with paleo tundra (moss and roots)	Loess		Moist to wet	8.84	< LOD	2245.38	< LOD	< LOD	98.61	44.94	281.06	
12SM65SB	120-132		Same as above, except with no paleo tundra	Loess		Moist	10.39	< LOD	2721.37	< LOD	< LOD	< LOD	49.11	240.09	
12SM65SB	132-144	12SM65SB12	Same as above, except grading to silty sand with gravel. Sand is fine to coarse grained, possible quartz. Gravel is sandstone with strong red brown to gray brown Fe-staining, 0.5-26cm, subangular to blocky. Stiff. Maximum length of hand auger 12' bgs.	Mixed loess/KG soil	at bottom of soil boring, but only mixed loess/KG soil recovered in soil sample. KG soil appears mineralized.	Moist	10.11	< LOD	2525.66	< LOD	< LOD	108.32	48.23	209.44	
12SM66SB	0-2		Organic mat (disturbed)	Organic mat (disturbed)		Dry to moist									
12SM66SB	2-12		Light gray to olive gray sandy silt. Sand is very fine grained. Silt is soft, low moisture, no plasticity.	Loess		Dry to moist	< LOD	< LOD	2364.81	< LOD	< LOD	84.73	40.26	256.95	
12SM66SB	12-24		12" to 16" same as above. 16" to 20" highly organic silt with decomposing organic matter, roots, paleosol. 20" to 24" olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess/Paleosol/Loess		Dry to moist	< LOD	< LOD	2633.26	< LOD	< LOD	< LOD	36.35	227.3	
12SM66SB	24-36		Olive gray sandy silt. Sand is fine grained. Silt is soft with no plasticity.	Loess		Dry to moist	8.36	< LOD	1991.8	< LOD	< LOD	89.29	49.49	262.09	
12SM66SB	36-48		Same as above	Loess		Moist	< LOD	< LOD	1701.62	< LOD	< LOD	83.46	40.75	222.14	
12SM66SB	48-60		Same as above, except increasing moisture, low plasticity. 30% sand. 70% silt.	Loess		Moist	< LOD	< LOD	2392.84	< LOD	< LOD	103.19	31.86	259.77	
12SM66SB	60-72		Same as above, except occasional Fe-staining	Loess		Moist	9.29	< LOD	2224.97	< LOD	< LOD	< LOD	40.33	275.24	
12SM66SB	72-84		Same as above, except with increasing sand (40%) and occasional medium gravel.	Loess		Moist	< LOD	< LOD	6/36.09	< LOD	< LOD	< LOD	44.82	230.15	
1231010030	04-90		Same as above, except with decreasing very fine grained sand (10%), low to medium	LOESS		IVIOISL	< LOD	< LOD	2175.06	< LOD	< LOD	01.0	43.02	207.07	
12SM66SB	96-108		plasticity, and increased Fe-staining.	Loess		Moist	< LOD	< LOD	2659.52	< LOD	< LOD	110.37	50.19	238.6	
12SM66SB	108-120		Fe-stained medium brown concretions associated with sand grains.	Loess		Moist	7.95	< LOD	2942.6	< LOD	< LOD	135.29	47.43	320.08	
12SM66SB	120-132		Same as above, Except with increasing red brown Fe-staining. Medium plasticity.	Loess	Lindiaturbed KC apil likely present	Moist to wet	< LOD	< LOD	1869.25	< LOD	< LOD	< LOD	30.03	213.29	
12SM66SB	132-144		Same as above, except with possible clay. Maximum length of hand auger 12' bgs.	Loess	below loess, but no KG soil encountered in soil boring.	Moist to wet	10.15	< LOD	2928.58	< LOD	< LOD	106.16	30.77	234	
Note: XRF res Key: bgs cm Fe ID KG soil XRF < LOD ppm XRF	= feet = inches = Below grou = centimeter = iron = Identificatid = Kuskokwin = X-ray fluor = X-ray fluor	on-dried samples. und surface on n Group bedrock escence spectrom the XRF instrumen million. escence	See Field Moisture Description for qualitative observations of moisture content of sample. derived soil letry nt level of detection												

	Station ID	SM51	SM52	SM52	SM52	SM52	SM53	SM54	SM55	SM55	SM55	SM56	SM57	SM58	SM59
	Sample ID	12SM51SB06	12SM52SB02	12SM52SB10	12SM52SB11	12SM90SB01 (field duplicate of 12SM52SB11)	12SM53SB10	12SM54SB11	128M558B04	12SM92SB01 (field duplicate of 12SM55SB04)	12SM55SB07	12SM56SB05	12SM57SB05	12SM58SB02	12SM59SB01
Table E-2 Additional Soil Characterization Laboratory Analytical Sample Results	Depth Interval inches bgs)	48-72	4-24	96-120	120-132	120-132	90-120	120-126	36-48	36-48	78-84	48-54	48-60	12-24	4-12
	Soil Type	KG Soil	KG Soil	Indeterminate. Possible mixed loess and KG soil.	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil
alyte Method															
Total Inorganic Elements (mg/kg)															
Aluminum	SW846 6020	14000 J	16000 J	14000 J	3050	3600 J	11000 J	14000 J	7400 J	11000 J	5300 J	13000 J	16000 J	18000 J	16000 J
Antimony	SW846 6020	3.7 J	0.56 J	0.71 J	83.8	72	0.71 J	0.44	0.56	0.66	6.6	0.66	0.57	1.3	2.8
Arsenic	SW846 6020	78	12	24	1930	2000	32	13	15	19	110	23	16	14	16
Barium	SW846 6020	190 J	98 J	180 J	247	240	200 J	210	150	210	260	200	240	92	78
Beryllium	SW846 6020	0.5	0.46	0.61	0.705	0.86	0.72	0.42	0.55	0.67	0.9	0.73	0.61	0.54	0.36
Cadmium	SW846 6020	0.31 J	0.26 J	0.31 J	0.652	0.65 J	0.46 J	0.48 J	0.40 J	0.55 J	0.70 J	0.40 J	0.43 J	0.20 J	0.13 J
Calcium	SW846 6020	2/00	2000	2400	1510	1500	2200	2700	1000	1200	1500	9/0	2300	840	/30
Chromium	SW846 6020	28 J	29 J	30 J	14.9	20	27 J	31	20	25	20	30	44	29	25
Cobalt	SW846 6020	11	12	10	20.2	25	20	15	9.3 J	20 J	22	21	17	19	7.6
Copper	SW846 6020	35 J	18 J	40 J	65.1	64	50 J	34	54	35	110	56	38	29	18
Iron	SW846 6020	26000	26000	26000	48200	62000	39000	30000	26000	33000	53000	35000	46000	34000	26000
Lead	SW846 6020	11	9.1 5000 I	11 4100 J	13.9	14	2100 I	11	10.0	14	23 J	16 J	11 J	11 J	8.9 J
Mangapasa	SW846 6020	4400 J	220 220	4100 J 220	062	1100	3100 J 760	970	240 I	2000 070 I	650	2900	4300	560	280
Margury	SW846 7471 4	400 8.8 I	0.066 I	330 17 I	702 110 I	120 I	181	0.33 I	211	26I	0.1 I	1.59	670 1.2 I	0.28 I	0.24 I
Nickal	SW846 6020	0.0 J 35 I	27 I	1./J 31 I	66.4	77	51 I	40	2.1 3	2.0 J	7.1 J 00	1.37	34	32	20
Potassium	SW846 6020	860 I	900 I	1000 I	935	1100 I	1100 I	930 I	1100 I	1300 J	2000 I	1600 I	1000 I	780 I	760 I
Selenium	SW846 6020	0.95	0.83	1.2	1.28	13	13	1	1.2	14	19	13	11	0.96	0.84 I
Silver	SW846 6020	0.13.1	0.077 J	0.13.1	0.223	0.22	0.15.1	0 18 J	0.14 J	0.17 J	0.36	0.18 J	0.15.1	0.096 J	0.086 J
Sodium	SW846 6020	120	94 J	130	41.6 J	50 J	82 J	110	53 J	86 J	52 J	100 J	150	89 J	100 J
Thallium	SW846 6020	0.14 J	0.15 U	0.14 U	0.509	0.54	0.14 U	0.14 U	0.14 U	0.14 J	0.17.1	0.16 J	0.16 U	0.14 U	0.16 U
Vanadium	SW846 6020	44 J	47 J	53 J	25.1	35	49 J	46	37	46	39	54	58	52	49
Zinc	SW846 6020	89 J	89 J	90 J	114	130	120 J	84	100	120	200	100	86	79	48
Total Organic Carbon (mg/kg)															
Total Organic Carbon	SW846 9060	2800	10000	4200	6360	5800	5500	3200	3400	3500	5800	4300	3100	26000	37000
Percent Moisture															
Percent Moisture	ASTM D 2216	17	20	18	6.6	11	10	20	9.3	6.8	15	15	19	19	25
Percent Solids	ASTM D 2216	83	80	82	93	89	90	80	91	93	85	85	81	81	75

	SM59 SM60		SM60 SM60		SM61	SM61	SM62	SM62	SM62	SM63	SM63	SM65
	12SM59SB05	12SM60SB06	12SM60SB07	12SM91SB01 (field duplicate of 12SM60SB07)	12SM61SB01	12SM61SB05	12SM62SB01	12SM62SB06	12SM62SB08	12SM63SB01	12SM63SB06	12SM65SB12
Table E-2 Additional Soil Characterization Laboratory Analytical Sample Results	48-60	60-72	72-84	72-84	10-16	48-60	4-16	64-72	90-96	4-12	60-72	132-144
	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	KG Soil	Loess with abundant organic matter	KG Soil	KG Soil	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.	Indeterminate. Appears to be mixed loess and KG soils, possibly mixed during early mining/sluicing operations.	Mixed loess/KG soil
Analyte												
Total Inorganic Elements (mg/kg)	10000 1	1500 X	1810	5 400 X	1 8000 8	1000 F	14000 7	0800 7	4400 X	4 CO 00 X	5000 X	10000 7
Aluminum	18000 J	4500 J	4/10	5400 J	15000 J	4900 J	15000 J	8700 J	4100 J	16000 J	5000 J	12000 J
Antimony	0.36	0.88 J	1.1/J	1.2	1./J	1.4	310	/.8 J	2.9 J	1.1	2.5	2.2
Arsenic	12	3/ 200 I	49.9	45	24 110 J	30	230	210 I	130	9./J	150 J	150
Barlum	290	200 J	253 J	270	110 J	2/0	190	310 J	230 J	81	130	190
C-dminm	0.38	0.67 I	0.899	0.88	0.56	0.65	0.33	0.76	0.84 I	0.38	1.4	0.79
Calaium	0.24 J	1200	0.822	0.69 J	750	2100	2300	0.36 J	0.84 J	1400	0.65 J 470	0.55 J
Chromium	21	22.1	22.2.1	21	750	2100	2300	21.1	1500	1400	470	1900
Cabalt	81	23 J	23.3 J 20.1	21	20 J	19	29	24	13 J	23	24	33
Connor	25	07.1	29.1	110	21.1	18	25	24 76 I	140 I	8.4 11 I	100 I	19
Iron	21000	64000	61100	51000	31000	53000	25	47000	22000	23000	77000	58000
Lead	12 I	22 I	23.3	21	831	12 I	9.21	17 I	22000 22 I	761	15 I	14 I
Magnesium	4700	830 I	956 I	1000	3100 I	870	4700	2000 I	660 I	3700	570	2500
Manganese	270	880	1080	1000	490	2400	390	1300	790	270	1700	790
Mercury	0.53 J	2.7 J	4.17	5.5 J	0.41 J	2.4 J	22 J	2.0 J	3.4 J	0.090 J	2.4 J	3.9 J
Nickel	30	81 J	130 J	94	31 J	67	27	82 J	79 J	20	80	52
Potassium	1300 J	1500 J	1450	1700 J	1000 J	1200 J	1100 J	1200 J	1700 J	550 J	1000 J	1100 J
Selenium	1	1.9	1.66	1.7	0.85	1.2	0.75	1.3	1.6	0.82	1.8	1.4
Silver	0.19 J	0.42	0.32	0.35	0.10 J	0.2	0.12 J	0.15 J	0.17 J	0.090 J	0.16 J	0.21 J
Sodium	160	48 J	51.2 J	50 J	120	39 J	130	49 J	52 J	53 J	47 U	74 J
Thallium	0.16 J	0.16 J	0.177 J	0.19 J	0.15 U	0.12 U	0.14 U	0.16 J	0.16 J	0.13 U	0.16 U	0.14 J
Vanadium	56	43	44.5	41	46	33	48	51	32	41	44	55
Zinc	86	170 J	203 J	200	70 J	110	64	140 J	180 J	54 J	160 J	120
Total Organic Carbon (mg/kg)												
Total Organic Carbon	3200	6000	110000	6900	13000	3500	11000	4400	5800	19000	5200	3100
Percent Moisture												
Percent Moisture	20	12	10	10	21	2.4	18	11	5.9	12	18	20
Percent Solids	80	88	90	90	79	98	82	89	94	88	82	80

Key: ASTM = American Society for Testing and Materials

bgs = Below ground surface ID = Identification

J = The analyte was detected. The associated result is estimated.

KG soil = Kuskokwim Group bedrock-derived soil

mg/kg = Milligrams per kilogram (dry)