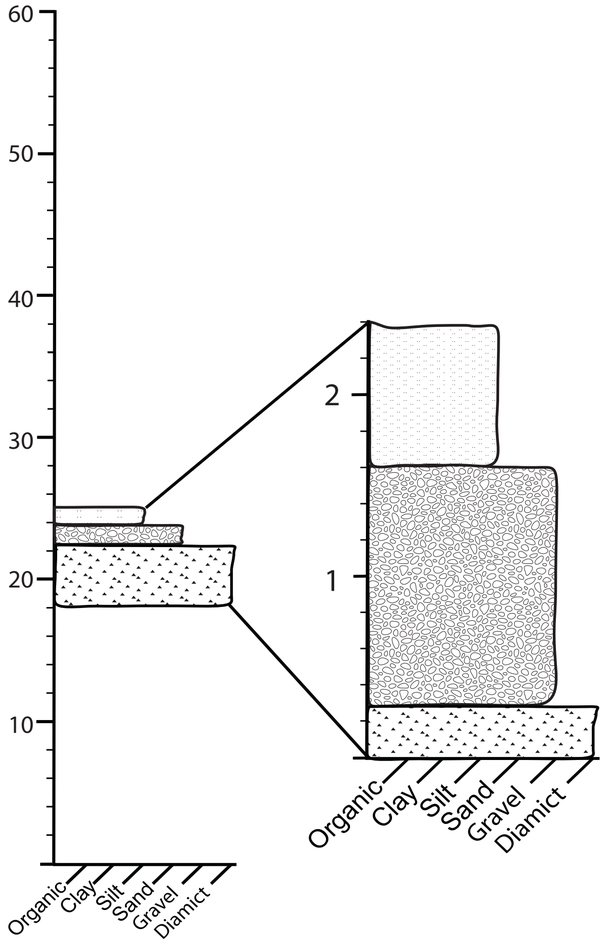
WR51

551400 m E
6936900 m N



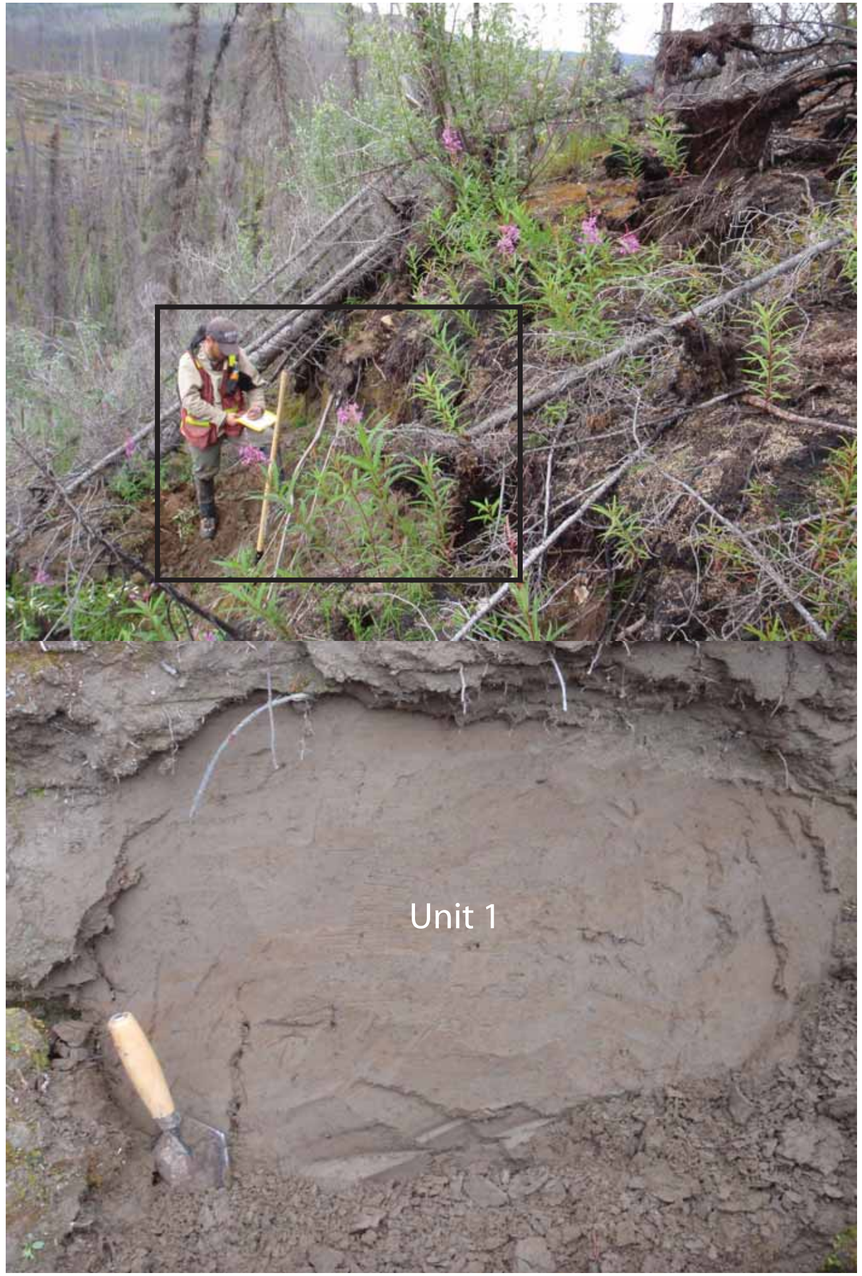
Unit 3: Massive, fine-grained sand. Some silt-rich layers. Limited oxidation. Interpreted as loess.

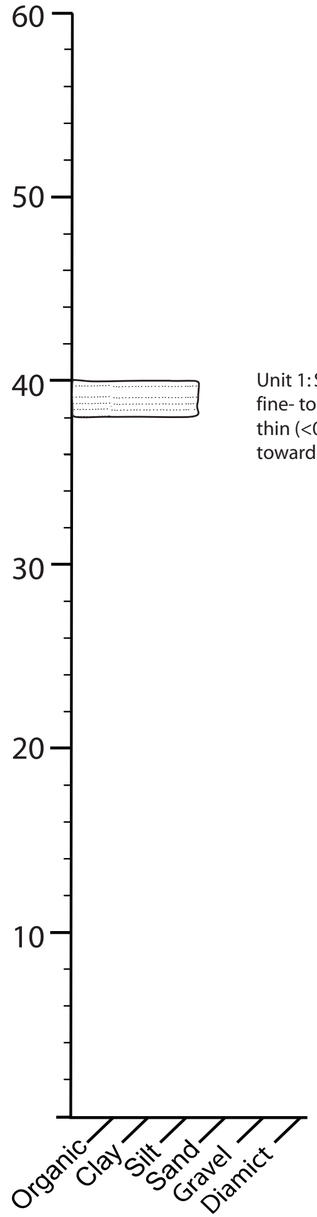
Unit 2: Matrix-supported gravel. Medium to coarse-grained sand matrix. Subrounded clasts. Maximum clast size cobble. Clasts have abundant Ca-beards throughout. Some weathered clasts. Top 20 cm mixed with loess.

Unit 1: Diamict. Mostly obscured.

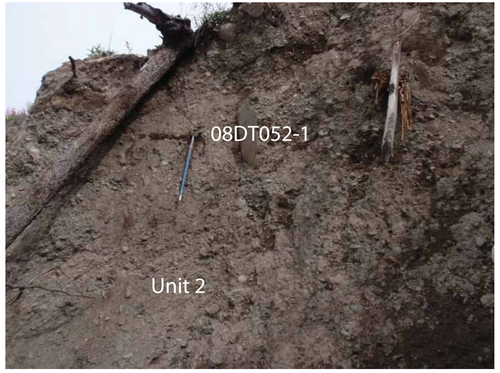
WR50

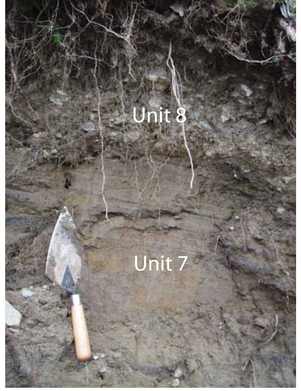
551558 m E
6936987 m N

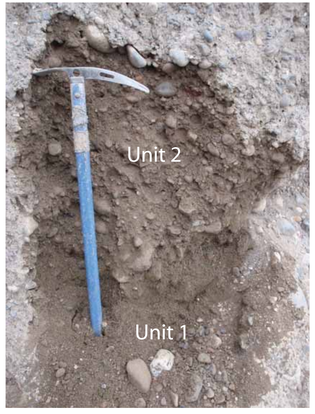


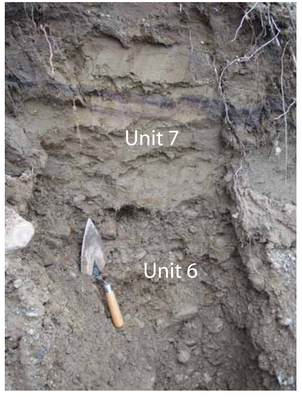


Unit 1: Small exposure in the top of a headscarp. Light to medium brown silty fine- to very fine-grained sand. Mostly massive, but there is some variation. Several thin (<0.5 cm thick) sand lenses <5 cm long. Some oxidation. The surface slopes ~15^{0} towards the north. Exposure likely moved down a few metres.



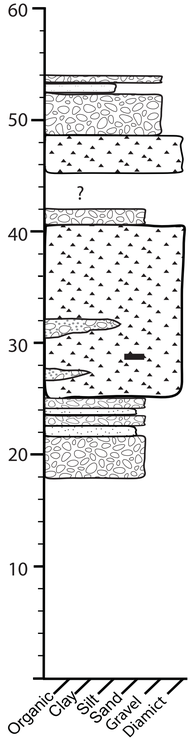






WR52

551419 m E
6936936 m N



Unit 8: Gravel. Medium- to coarse-grained sand matrix. Maximum clast size of cobble, average size pebble. Clast supported (matrix likely eroded). Ca-beards common. Erosive lower contact. Minor oxidation of matrix.

Unit 7: Well sorted silt. Interbedded and interlaminated with fine-grained sand. Coarsens up. Some (<5%) small pebbles. Dark organic-rich laminations dipping towards the river. Heavily oxidized.

Unit 6: Gravel. Variably oxidized. Weakly stratified. Medium- to coarse-grained sand matrix. Subrounded clasts with a maximum size of cobble. Matrix supported. Ca-beards common. Erosive lower contact.

Unit 5: Diamict. Grey. 25-30% clasts. Consolidated.

Unit 4: Gravel

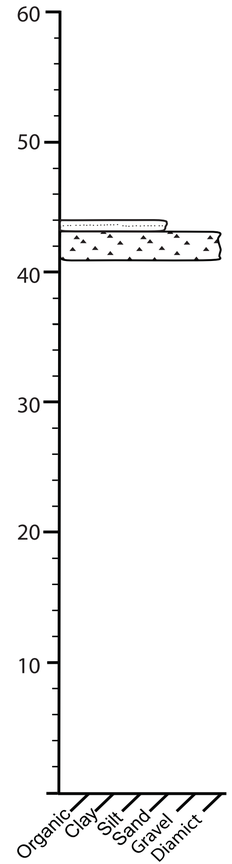
Unit 2: Diamict. Similar to Unit 5, but more clast-rich (40-45%). Some clasts are heavily striated. Several gravel lenses. Possibly colluvium.

08DT052-1: Horizontal organic-rich lens, 4 m above contact. 50 cm wide and 10 cm high. Visible spruce needles.

Unit 1: Interbedded sand and gravel. Sand is well sorted and coarse-grained. Gravel is well sorted with subrounded pebbles to cobbles. Clasts are not as weathered as the gravel at the top of the exposure. No Ca-beards or oxidation.

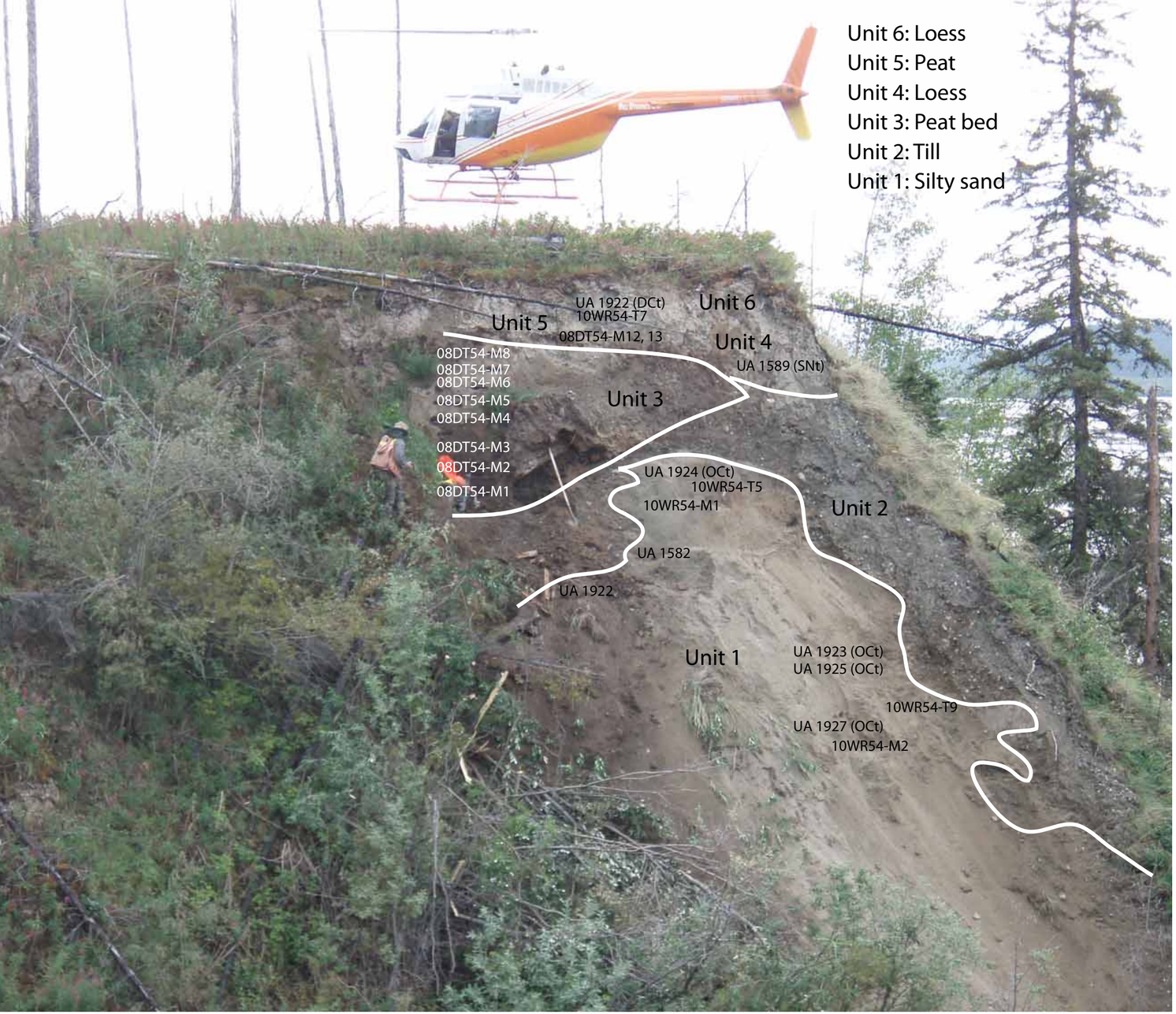
WR53

551453 m E
6937280 m N



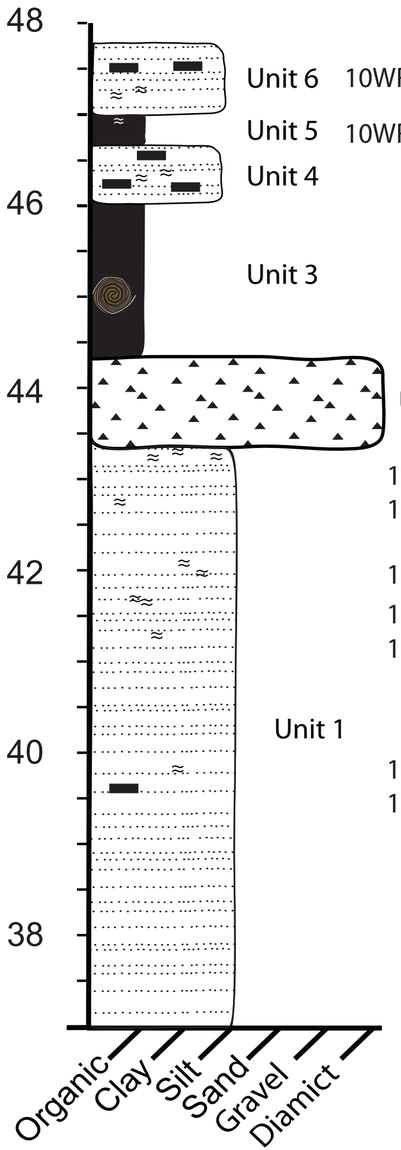
Unit 2: Silty fine-grained sand. Massive. Brown to light grey. Some (<5%) small pebbles and granules. Modern soil development to 15-20 cm depth. Interpreted as loess.

Unit 1: Diamict. Silty fine-grained sand matrix. Maximum clast size is cobble. 25-30% clasts. Some clasts are oxidized, weathered and frost-shattered. Weathering penetrates 80 cm into diamict. Many clasts are striated.



WR54

551486 m E
6937345 m N



Unit 6 10WR54-T6: UA 1922 (DCt - ca. 83 ka)

Unit 5 10WR54-T7 M12 M13 M11 M10 M9

Unit 4

M10: >55 400 ka BP
08DT54-T2: UA 1589 (SNt)

Unit 3 M7 M8 M5 M6 M3 M4 M1 M2

M7: 55 400 +/- 3300 ka BP
M7: 29 680 +/- 190 ka BP

Unit 2

08DT54-T1: UA 1581
10WR54-T1: UA 1922
10WR54-T3: UA 1924 (OCt - ca. 124 ka)
10WR54-T5
10WR54-M1

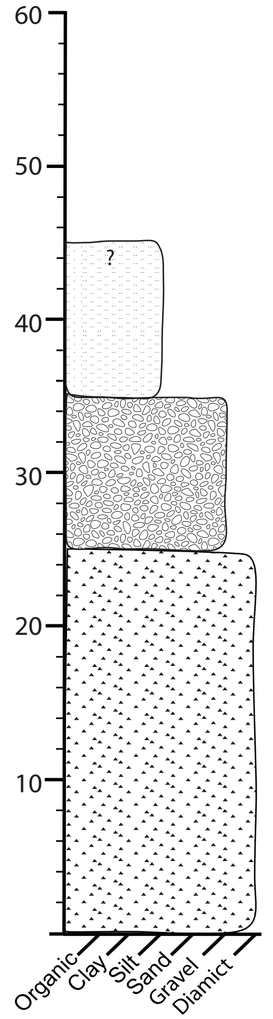
10WR54-T2: UA 1923 (OCt)
10WR54-T4: UA 1925 (OCt)
10WR54-T9

Unit 1

10WR54-T8: UA 1927 (OCt)
10WR54-M2

WR90

551578 m E
6937606 m N



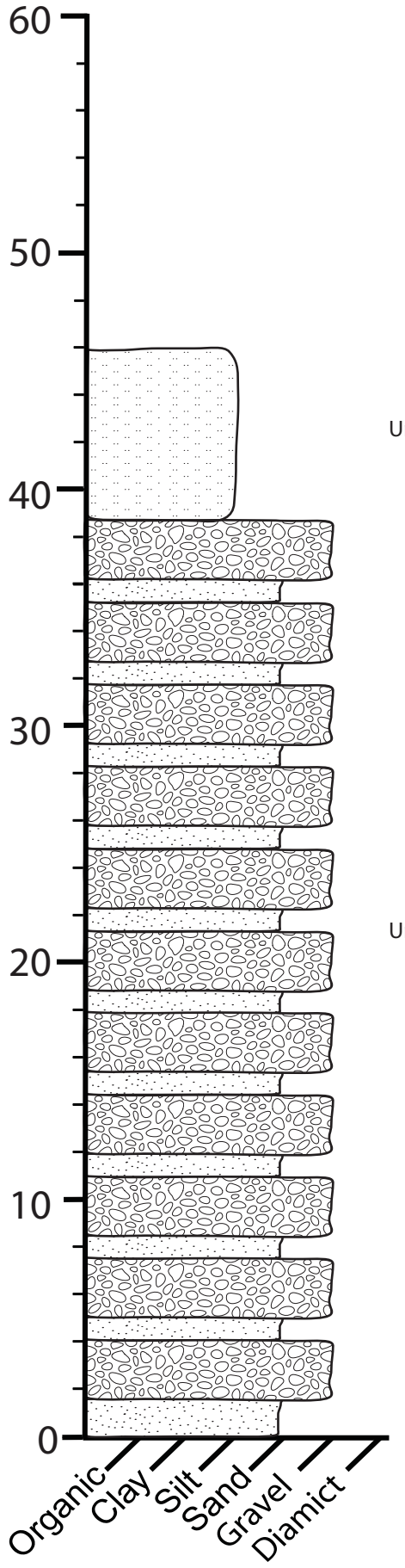
Unit 3: Bedded and laminated silt and fine-grained sand.
Interpreted as glaciolacustrine. Upper contact obscured by slump.

Unit 2: Dominantly gravel with some sand beds.
Interpreted as glaciofluvial outwash.

Unit 1: Diamict, interpreted as till.

WR91

551586 m E
6937665 m N

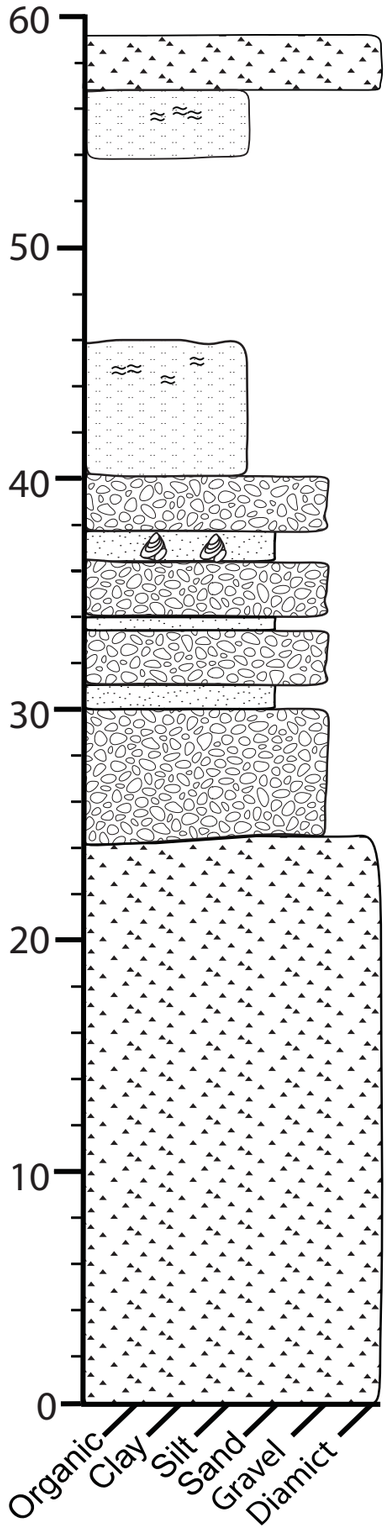


Unit 2: Bedded and laminated silt and fine-grained sand. Interpreted as glaciolacustrine.

Unit 1: Interbedded sand and gravel. Bedding measurements are 000/080.

WR92

551595 m E
6937714 m N



Unit 4: Diamict. Consolidated. Interpreted as till.

10WR92-T1: UA 1990 (SCt-type)

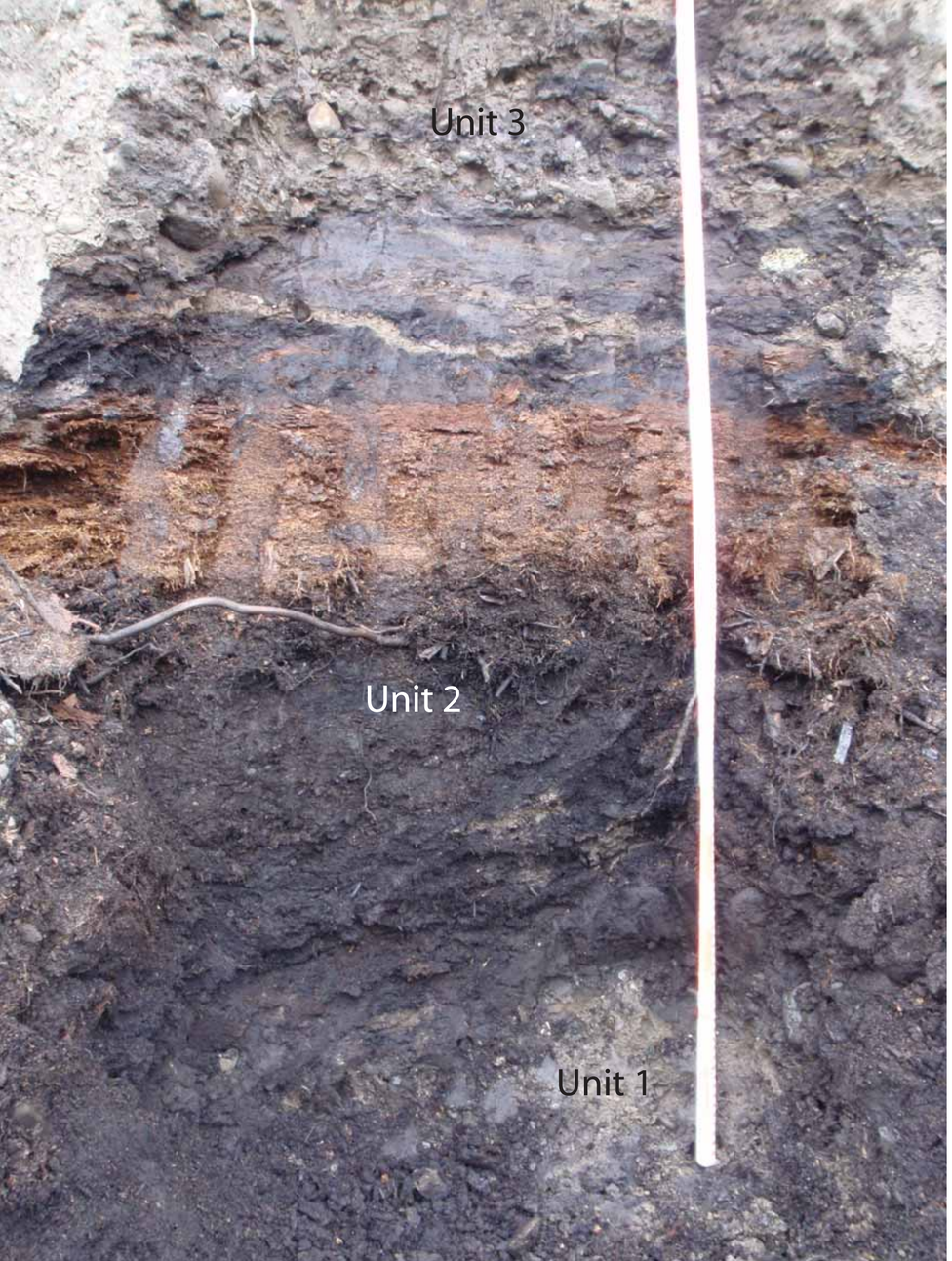
Unit 3: Interbedded and interlaminated silt and fine-grained sand. Covered between 46 m and 56 m.

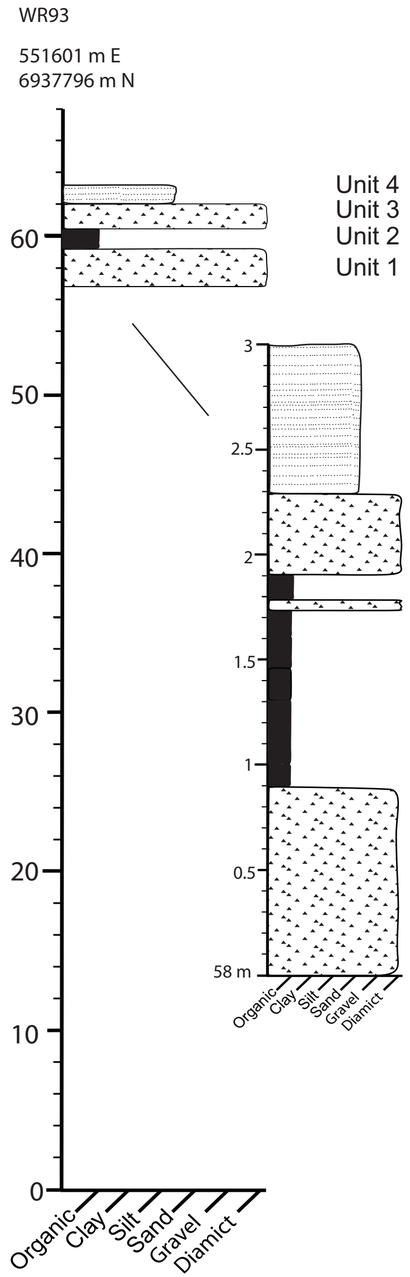
08DT92-T1: UA 1581 (WoodChopper Creek tepha)
10WR92-M1

08DT92-M1

Unit 2: Gravel with interbedded gravel, sand and silt above. Shells sampled in a silt-rich bed near the top of the unit.

Unit 1: Diamict. Consolidated. Interpreted as till.



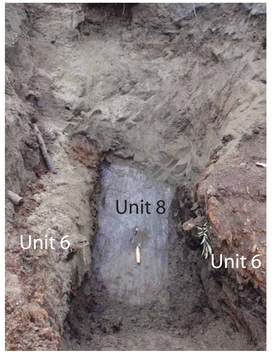


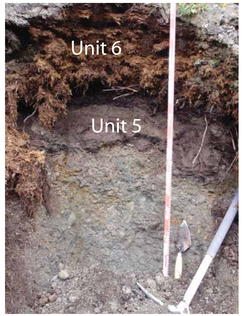
Unit 4: Silt and fine-grained sand. Interpreted as loess.

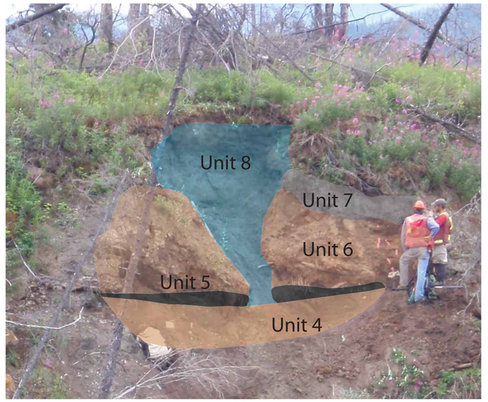
Unit 3: Diamict. Gradational lower contact. Weakly stratified. 40 cm thick, but may be displaced at the top. Similar to unit 1, with variable colours from dark brown to black to tan brown. Colours define crude subhorizontal stratification.

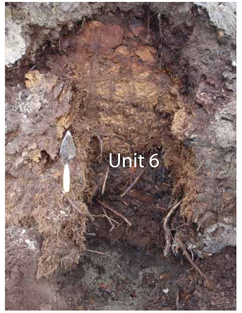
Unit 2: Organic-rich unit comprising at least 5 distinct horizonsunits of mesic, humic and fibric peat. Abundant macrofossils and pieces of wood, sphagnum moss and sedges. Near the top of the unit, there are more clastic beds of dominantly pebble-rich diamict and silty-clay. Organic-rich beds thin and clastic beds thicken towards the top of the unit.

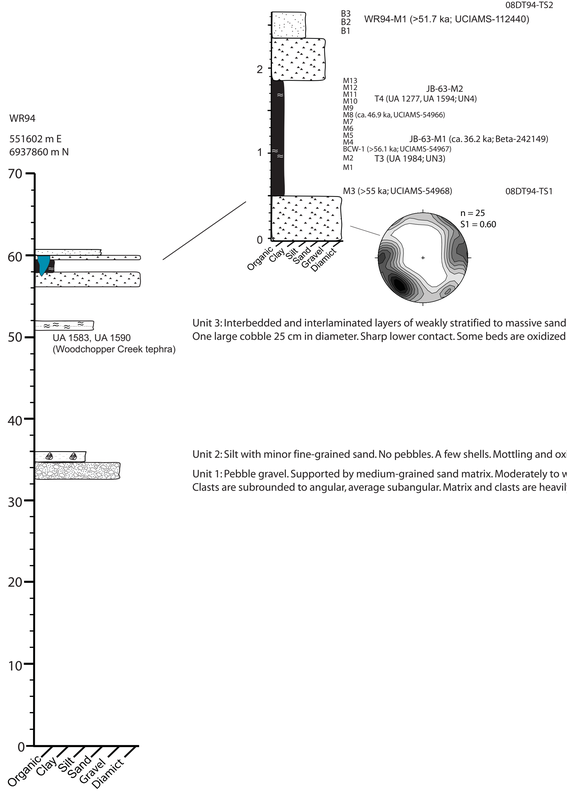
Unit 1: Pebble-rich diamict. 30-35% clasts, maximum size 4-5 cm, average size 1-2 cm. Clasts are subrounded, with some fracturing. Matrix is silt and very fine-grained sand. Matrix mottled greyish brown and black-brown.











Unit 3: Interbedded and interlaminated layers of weakly stratified to massive sand and silt. Sand beds are fine- to coarse-grained. One large cobble 25 cm in diameter. Sharp lower contact. Some beds are oxidized and mottled.

Unit 2: Silt with minor fine-grained sand. No pebbles. A few shells. Mottling and oxidization.

Unit 1: Pebble gravel. Supported by medium-grained sand matrix. Moderately to well-sorted. Clasts are subrounded to angular, average subangular. Matrix and clasts are heavily oxidized.

Unit 8: Ice wedge. Lateral contact with the peat is sub-horizontal. Fill with mostly well sorted sand with no silt. Medium- to coarse-grained. Massive. There are some pebbles (<5%). The sand is heavily fractured throughout. One cobble observed. Many frost shattered clasts in situ. Visible organics, rodent bones and coprolite. throughout.

Unit 7: Diamict. See WR93, Unit 3 for description of diamict above peat.

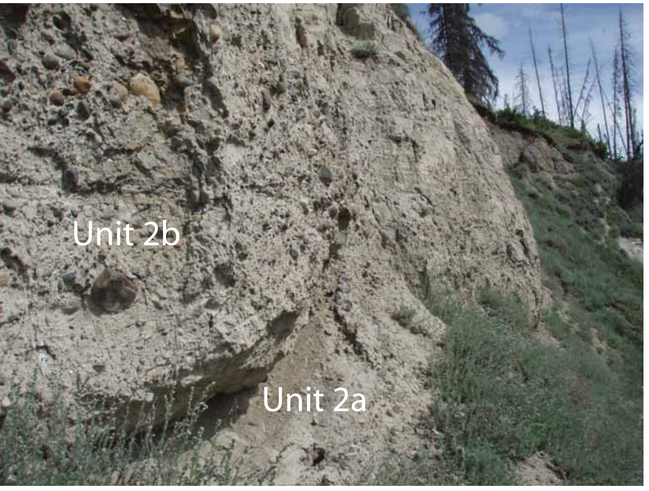
Unit 6: Approximately 1 m of peat with visible needles, plant and insect macrofossils and large, woody debris. Bottom 20 cm is black, mesic to humic organics with abundant rodent feces. Above that is 15-20 cm of moss, twigs and branches. Wood is stripped of bark. Also abundant needles and some intact leaves. Above this is 30 cm of light brown to black, moss-rich organics with roots. Top bed is hard and platy compressed fibric material with some woody debris. Plates are dipping sub-vertically down the modern slope, but at a steeper angle.

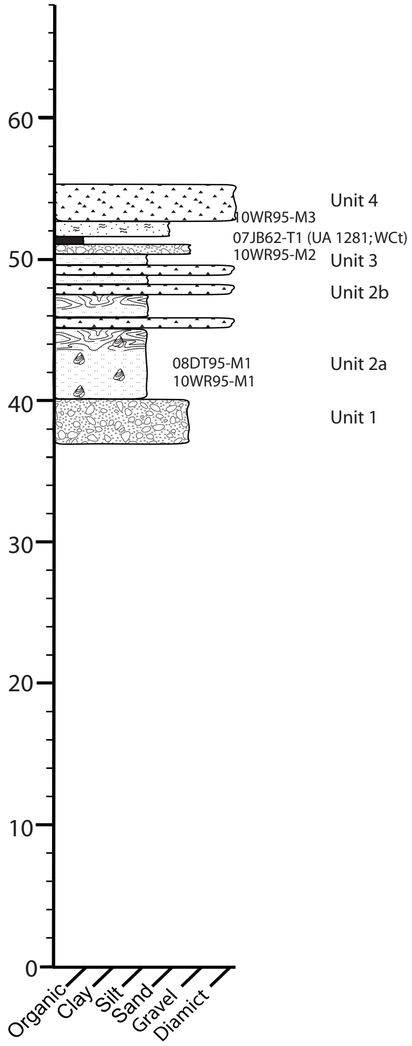
Unit 5: Paleosol and well-preserved peat. Soil is 50 cm thick. Oxidized B-horizon with an angular blocky structure. Less Ca-concentration towards the top of the B-horizon. B-horizon is yellowish-red (5 YR 4/6). A-horizon is 10-15 cm thick and is very dark brown (7.5 YR 2.5/3). The bottom of the A-horizon is cryoturbated. Interpreted as a turbic cryosol. Mineral material is silt. Above the paleosol is ~1 m of peat with visible needles, plant and insect macrofossils and large, woody debris. The top 20 cm is hard and platy compressed fibric material.

Unit 4: Diamict. Silt matrix. 25-30% clasts. Clasts are subrounded to angular, average subangular. Maximum clast size is 30 cm. Interpreted as colluvium.

WR95

551619 m E
6937945 m N
559 masl





Unit 4: Overconsolidated diamict. Difiicult to penetrate with shovel. Fresh surface is dark brown, weathered is light grey. ~25-30% clasts. Sandy-silt matrix. Well rounded to angular clasts, average subrounded. Range of lithologies. Maximum clast size =31cm. Some striated clasts. Top 40 cm is weathered. Transition to weathered horizon is gradual. Weathered horizon has less matrix and is unconsolidated, blocky and crumbles. There is a 20 cm long by 10 cm high silt lens in this horizon.

Unit 3: Interbedded gravel, sand and silt. Gravel is 25 cm thick, coarse-grained sand matrix supported, oxidized, well rounded to subangular clasts, thin Ca-beards, maximum clast size = 40 cm, some fine-grained sand to silt beds. Above that is 20 cm of massive to weakly laminated silt, oxidized, undulating lower contact. Above that is 30 cm of finely laminated, bedded and massive organic-rich silt and sand, with some pebbles. Above that is 10 cm of tephra with interbedded creamy glass bed with abundant hornblende, and dark mafic-dominated beds. The tephra fines upwards and has fewer mafics. The tephra is coarse-grained sand-sized glass and infilled cracks at lower contact. It is possibly burrowed at its upper contact. Above that is 75 cm of organic-rich silt and sand, similar to below the tephra. Above that is 80 cm of massive, fractured, fine- to medium-grained sand with ~10% granules and pebbles, no organics or sedimentary structures.

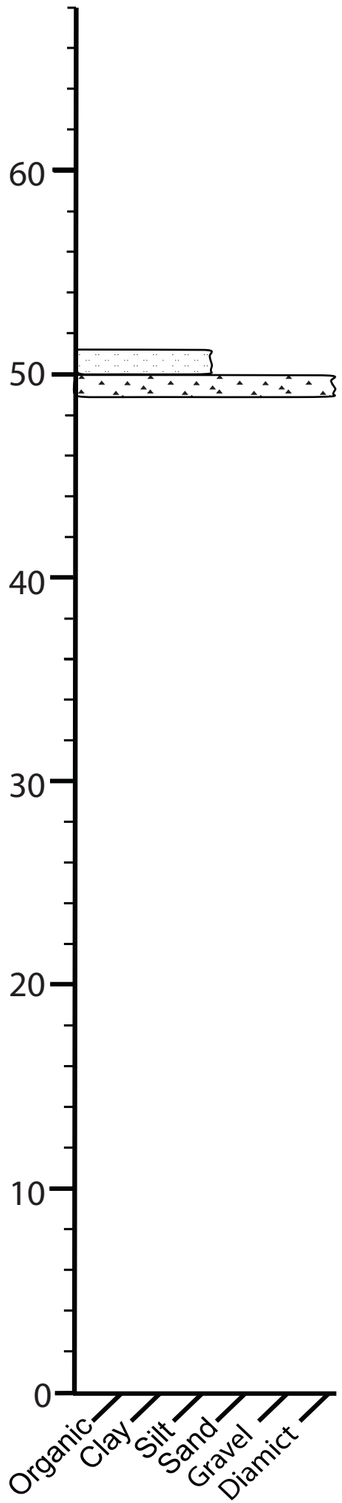
Unit 2b: Laterally discontinuous diamict beds. Beds thin to the southwest. Massive. Sharp, erosive lower contact with silt beds. Sandy-silt matrix. 25-30% clasts. Some striated clasts. Well rounded to subangular clasts, average subrounded. Maximum clast size is 10 cm. There are some silt lamination in the diamict that are heavily deformed. Lowest diamict bed is ~165 cm thick at its thickest point. Diamict beds likely represent 5, maybe 6, events.

Unit 2a: Finely laminated and bedded sandy-silt with rare sand and clay beds and laminations (average thickness ~0.5 cm; maximum thickness = 2.5 cm). Top half is interbedded with diamict beds. Horizontal planer bedding, with a slight dip to the north (281/08). Abundant gastropods in lower half of unit. Some also observed above the lowest diamict bed, but not above that. Soft sediment deformation is common. Lower contact with diamict beds drape clasts. Oxidation evident at bottom of silt beds and laminations, then less oxidized towards their upper contacts.

Unit 1: Heavily oxidized gravel. Silty-sand matrix. Well rounded to subrounded clasts. Maximum clast size is boulder (~25cm). Clast-rich, almost clast supported. Matrix is medium- to coarse-grained sand. Lower contact is covered.

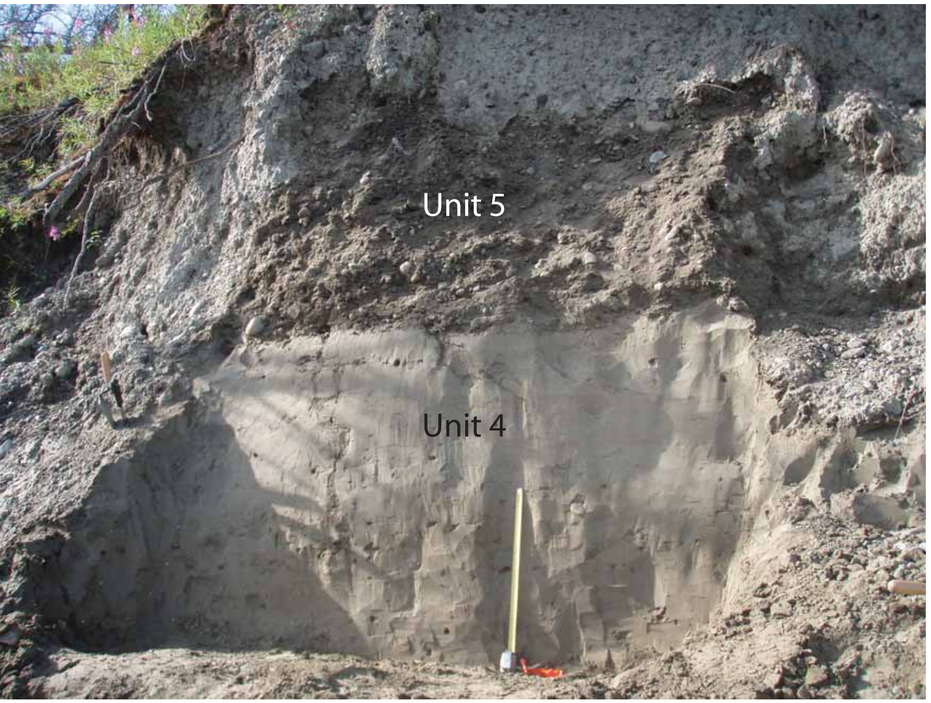
WR96

551591 m E
6938039 m N
558 masl



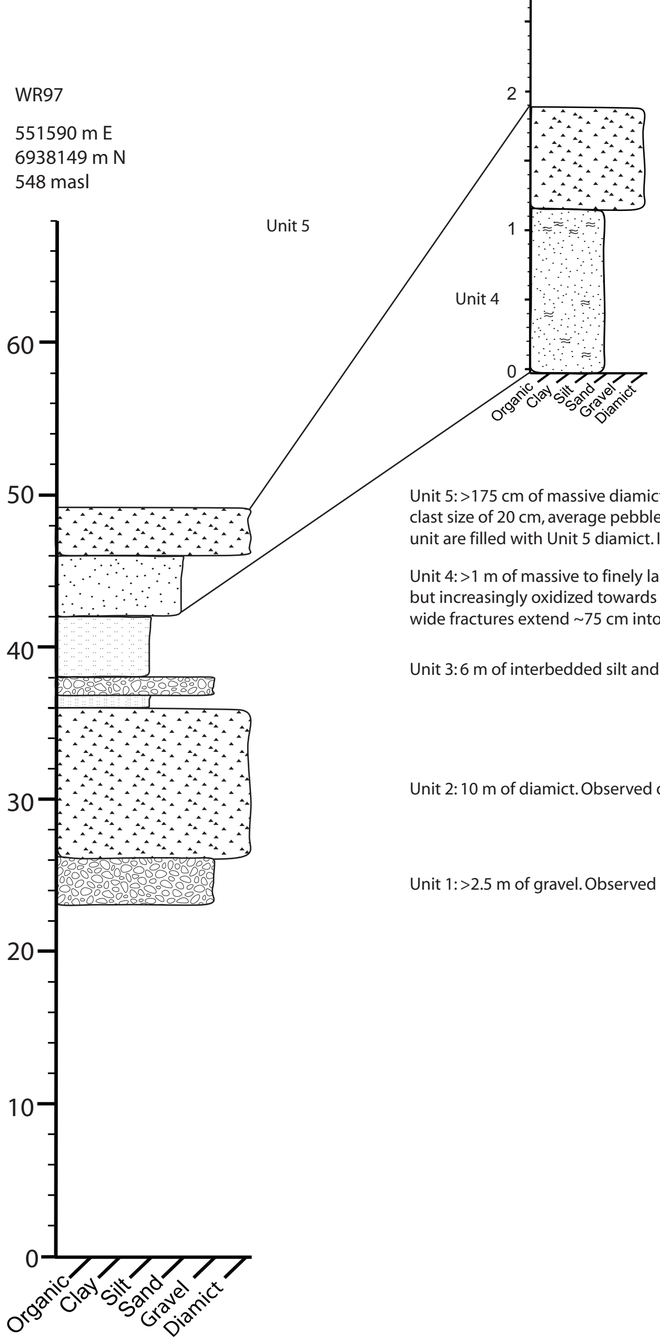
Unit 2: 55 cm thick, well sorted, silty fine-grained sand. Vertical oxidation pattern and mottles. Blocky, crumbles when excavated. <5% pebbles and granules. Modern roots are abundant throughout unit. Interpreted as slumped loess.

Unit 1: 30 cm thick, clast-rich, dark grey diamict. Sandy-silt matrix, some minor clay, ~45% clasts, subrounded to subangular, average subrounded. Maximum clast size is boulder.



WR97

551590 m E
6938149 m N
548 masl



10WR97-T1
07JB51-T1 (UA 1279; WCt)
10WR97-T2
07JB51-T3 (UA 1278; Unknown)
10WR97-T3
10WR97-T4 (UA 1994; Unknown)

10WR97-B1

10WR97-M1

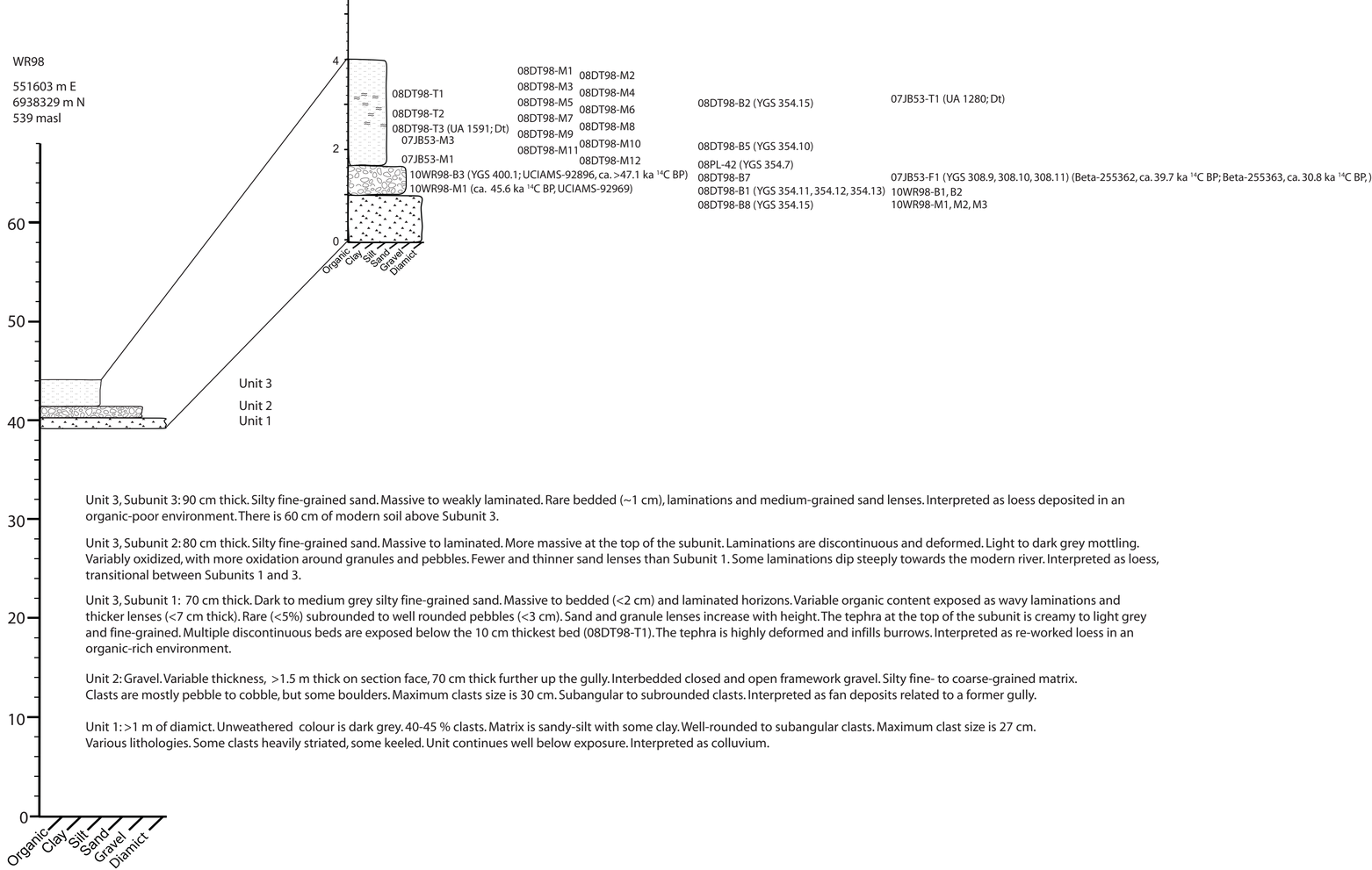
Unit 5: >175 cm of massive diamict. Lower contact is sharp, undulatory and erosive. Matrix is sandy-silt with minor clay. 25-30% clasts with a maximum clast size of 20 cm, average pebble. Well rounded to subangular, average subrounded. Dark brown, weathers light grey. Fractures extending into underlying unit are filled with Unit 5 diamict. Interpreted as till.

Unit 4: >1 m of massive to finely laminated silty fine-grained sand. Well sorted. A few pebbles and one boulder. Unoxidized for the bottom 85 cm, but increasingly oxidized towards the top of the unit. Interbedded with light grey, unoxidized beds. Some mottles in upper half. Multiple 3-5 mm wide fractures extend ~75 cm into the unit from the diamict above, interpreted as injection features. Unit is interpreted as loess.

Unit 3: 6 m of interbedded silt and sand with one prominant gravel bed. Observed only from river level. Interpreted as glaciolacustrine.

Unit 2: 10 m of diamict. Observed only from river level. Interpreted as till.

Unit 1: >2.5 m of gravel. Observed only from river level. Interpreted as fluvial.



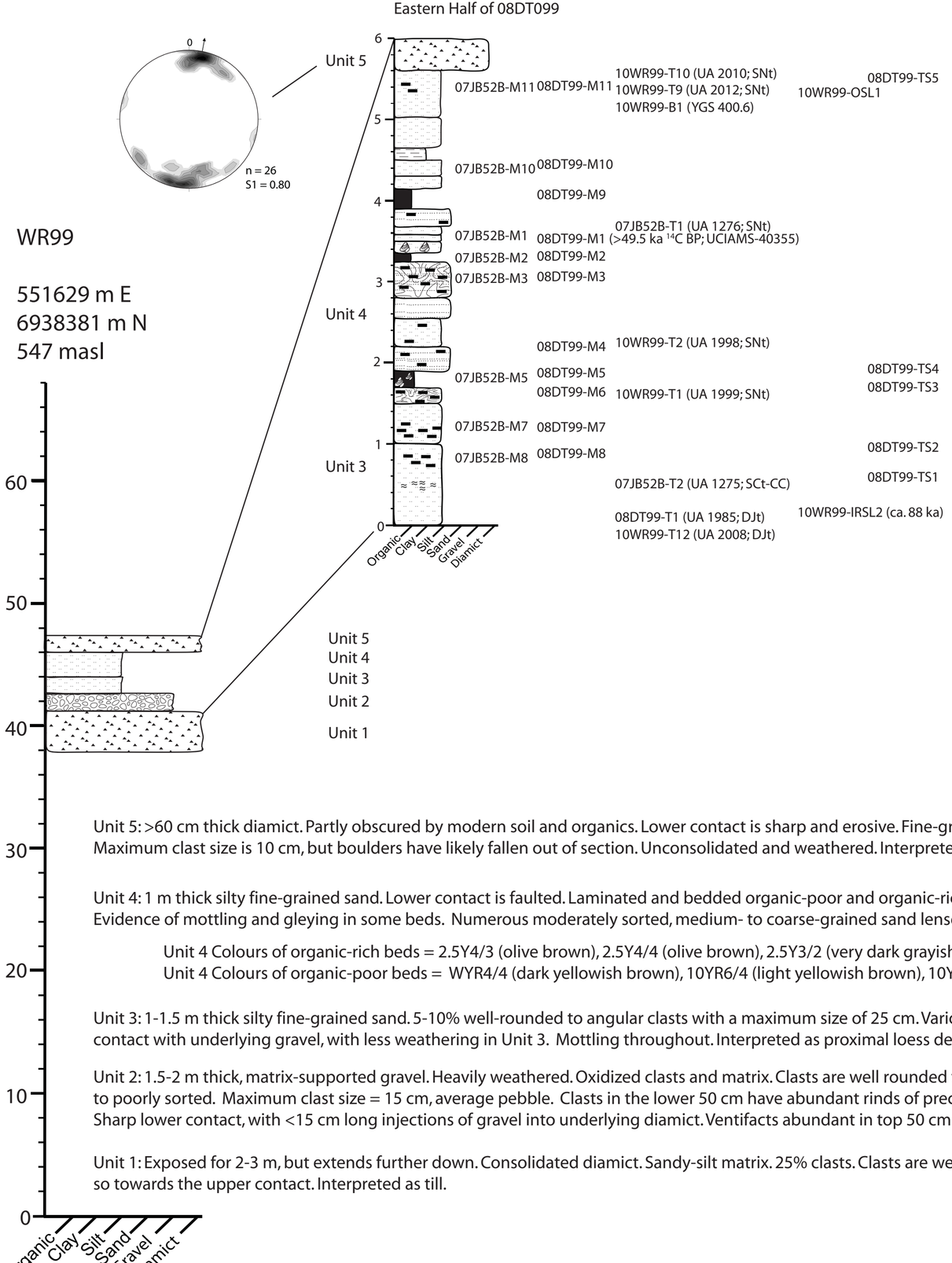
Unit 3, Subunit 3: 90 cm thick. Silty fine-grained sand. Massive to weakly laminated. Rare bedded (~1 cm), laminations and medium-grained sand lenses. Interpreted as loess deposited in an organic-poor environment. There is 60 cm of modern soil above Subunit 3.

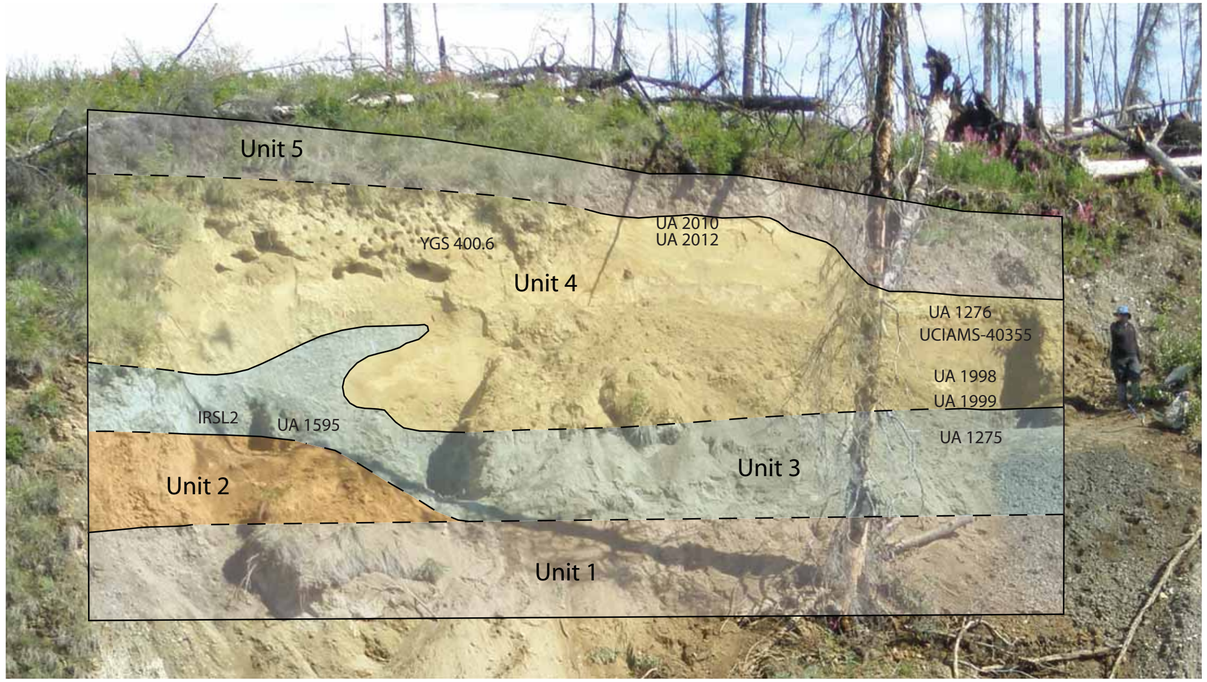
Unit 3, Subunit 2: 80 cm thick. Silty fine-grained sand. Massive to laminated. More massive at the top of the subunit. Laminations are discontinuous and deformed. Light to dark grey mottling. Variably oxidized, with more oxidation around granules and pebbles. Fewer and thinner sand lenses than Subunit 1. Some laminations dip steeply towards the modern river. Interpreted as loess, transitional between Subunits 1 and 3.

Unit 3, Subunit 1: 70 cm thick. Dark to medium grey silty fine-grained sand. Massive to bedded (<2 cm) and laminated horizons. Variable organic content exposed as wavy laminations and thicker lenses (<7 cm thick). Rare (<5%) subrounded to well rounded pebbles (<3 cm). Sand and granule lenses increase with height. The tephra at the top of the subunit is creamy to light grey and fine-grained. Multiple discontinuous beds are exposed below the 10 cm thickest bed (08DT98-T1). The tephra is highly deformed and infills burrows. Interpreted as re-worked loess in an organic-rich environment.

Unit 2: Gravel. Variable thickness, >1.5 m thick on section face, 70 cm thick further up the gully. Interbedded closed and open framework gravel. Silty fine- to coarse-grained matrix. Clasts are mostly pebble to cobble, but some boulders. Maximum clasts size is 30 cm. Subangular to subrounded clasts. Interpreted as fan deposits related to a former gully.

Unit 1: >1 m of diamict. Unweathered colour is dark grey. 40-45 % clasts. Matrix is sandy-silt with some clay. Well-rounded to subangular clasts. Maximum clast size is 27 cm. Various lithologies. Some clasts heavily striated, some keeled. Unit continues well below exposure. Interpreted as colluvium.





Unit 5: >60 cm thick diamict. Partly obscured by modern soil and organics. Lower contact is sharp and erosive. Fine-grained, sandy-silt matrix. 25% clasts. Variable lithologies. No observed striations. Well-rounded to subangular clasts, average subangular. Maximum clast size is 10 cm, but boulders have likely fallen out of section. Unconsolidated and weathered. Interpreted as till.

Unit 4: 1 m thick silty fine-grained sand. Lower contact is faulted. Laminated and bedded organic-poor and organic-rich horizons. Lower layers have convoluted beds <50 cm thick. <5% clasts. Variable thickness. Faulted by up to 1.5 m with a vergence to the east. Evidence of mottling and gleying in some beds. Numerous moderately sorted, medium- to coarse-grained sand lenses up to 80 cm thick. Interpreted as re-worked loess and organic-rich sediment deposited in a pond or small lake environment.

Unit 4 Colours of organic-rich beds = 2.5Y4/3 (olive brown), 2.5Y4/4 (olive brown), 2.5Y3/2 (very dark grayish brown), 2.5YR4/6 (strong brown), 10YR3/3 (dark brown, 7.5YR2.5/2 (very dark brown)
Unit 4 Colours of organic-poor beds = WYR4/4 (dark yellowish brown), 10YR6/4 (light yellowish brown), 10YR7/3 (very pale brown), 10YR3/3 (dark brown), 10YR4/6 (dark yellowish brown), 5Y3/1 (very dark grey), 2.5Y3/3 (dark olive brown)

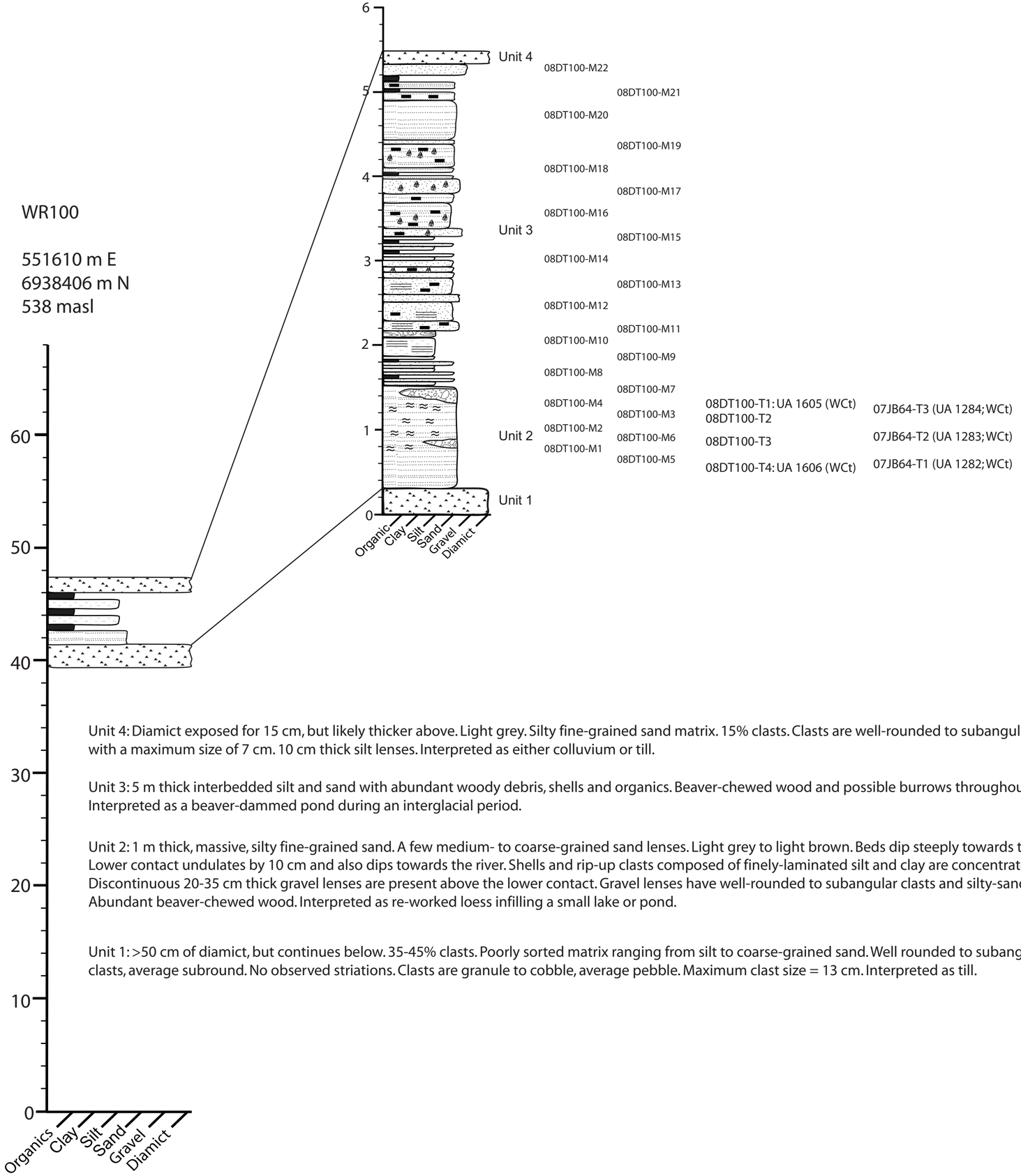
Unit 3: 1-1.5 m thick silty fine-grained sand. 5-10% well-rounded to angular clasts with a maximum size of 25 cm. Various lithologies. Clast percentage increases upwards. Blocky structure. Many faults ranging from <5 cm to >1 m. Sharp and undulating lower contact with underlying gravel, with less weathering in Unit 3. Mottling throughout. Interpreted as proximal loess deposited in an organic-poor environment.

Unit 2: 1.5-2 m thick, matrix-supported gravel. Heavily weathered. Oxidized clasts and matrix. Clasts are well rounded to subangular, average well rounded. Some clasts are completely weathered. Matrix is medium- to coarse-grained sand that is moderately to poorly sorted. Maximum clast size = 15 cm, average pebble. Clasts in the lower 50 cm have abundant rinds of precipitated calcium carbonate. Some of these clasts are rotated by cryoturbation. Evidence of translocation of silt and clay downwards through unit. Sharp lower contact, with <15 cm long injections of gravel into underlying diamict. Ventifacts abundant in top 50 cm. Interpreted as outwash weathered during an interglacial period.

Unit 1: Exposed for 2-3 m, but extends further down. Consolidated diamict. Sandy-silt matrix. 25% clasts. Clasts are well rounded to angular, average subangular. Mixed lithologies. Clasts range from granule to boulder, average pebble. Variably oxidized, increasingly so towards the upper contact. Interpreted as till.

WR100

551610 m E
6938406 m N
538 masl



08DT100-T1: UA 1605 (WCt)
08DT100-T2
08DT100-T3
08DT100-T4: UA 1606 (WCt)

07JB64-T3 (UA 1284; WCt)
07JB64-T2 (UA 1283; WCt)
07JB64-T1 (UA 1282; WCt)

Unit 4: Diamict exposed for 15 cm, but likely thicker above. Light grey. Silty fine-grained sand matrix. 15% clasts. Clasts are well-rounded to subangular, mode subrounded, with a maximum size of 7 cm. 10 cm thick silt lenses. Interpreted as either colluvium or till.

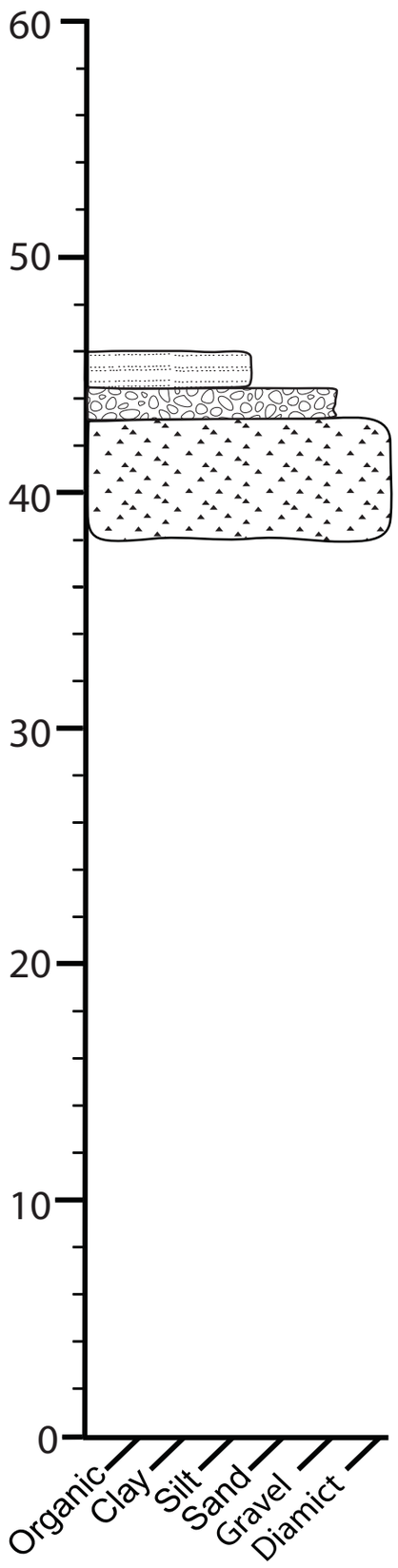
Unit 3: 5 m thick interbedded silt and sand with abundant woody debris, shells and organics. Beaver-chewed wood and possible burrows throughout the unit. Interpreted as a beaver-dammed pond during an interglacial period.

Unit 2: 1 m thick, massive, silty fine-grained sand. A few medium- to coarse-grained sand lenses. Light grey to light brown. Beds dip steeply towards the modern river. Lower contact undulates by 10 cm and also dips towards the river. Shells and rip-up clasts composed of finely-laminated silt and clay are concentrated at the lower contact. Discontinuous 20-35 cm thick gravel lenses are present above the lower contact. Gravel lenses have well-rounded to subangular clasts and silty-sand matrix. Abundant beaver-chewed wood. Interpreted as re-worked loess infilling a small lake or pond.

Unit 1: >50 cm of diamict, but continues below. 35-45% clasts. Poorly sorted matrix ranging from silt to coarse-grained sand. Well rounded to subangular clasts, average subround. No observed striations. Clasts are granule to cobble, average pebble. Maximum clast size = 13 cm. Interpreted as till.

WR101

551604 m E
6938463 m N



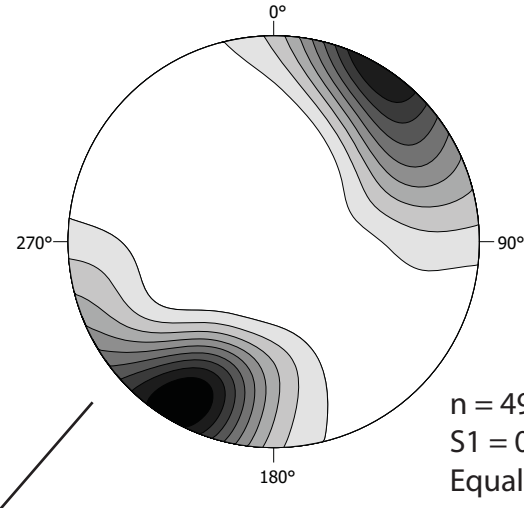
Unit 3: Interlaminated and interbedded fine-grained sand and silt. Well sorted. Some gastropods. Beds are dipping steeply towards the river. Interpreted as re-sedimented loess. There are 2.5 cm thick beds of gravel within 40 cm of the lower contact. Between these are sandy-silt and fine-grained sand couplets, also dipping towards the river. Right at the lower contact there is also a well sorted, fine-grained sand bed 10 cm thick, with rare (<5%) pebbles.

Unit 2: Highly weathered and oxidized gravel. Moderately sorted. Gravel is supported by a matrix of coarse sand. Clasts are well rounded to angular, average subangular. Maximum clasts size is 13 cm, with an average size of large pebbles. Clasts are less oxidized at the bottom.

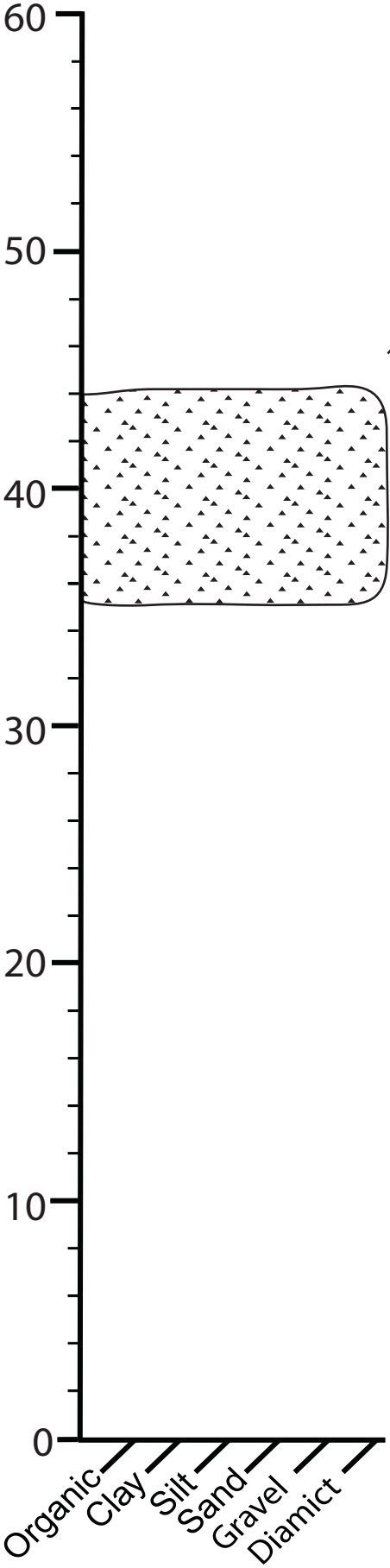
Unit 1: Diamict. Silt matrix. 30% clasts that are subrounded to angular, average subrounded. Some clasts are bullet shaped and have fractured ends. Consolidated. Interpreted as till.

WR102

551572 m E
6938630 m N
543 m



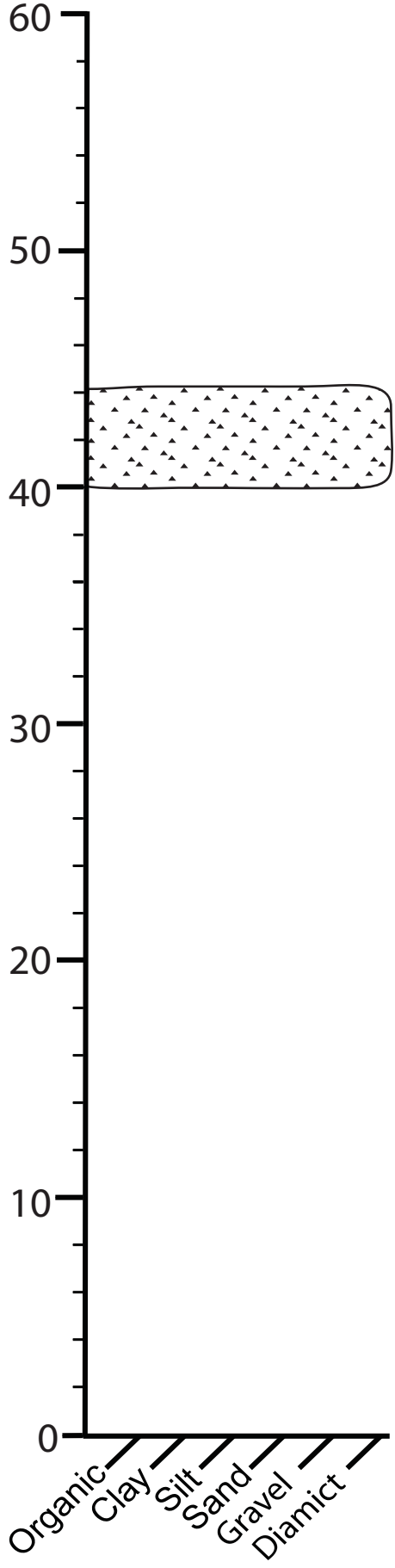
n = 49
S1 = 0.768
Equal angle projection, lower hemisphere



Unit 1: 8.5 m of diamict. Consolidated. 25-30% clasts. Light grey. Clasts are well-rounded to subangular. Various lithologies. Maximum clasts size is 30 cm. Silty fine-grained sand matrix. Interpreted as till.

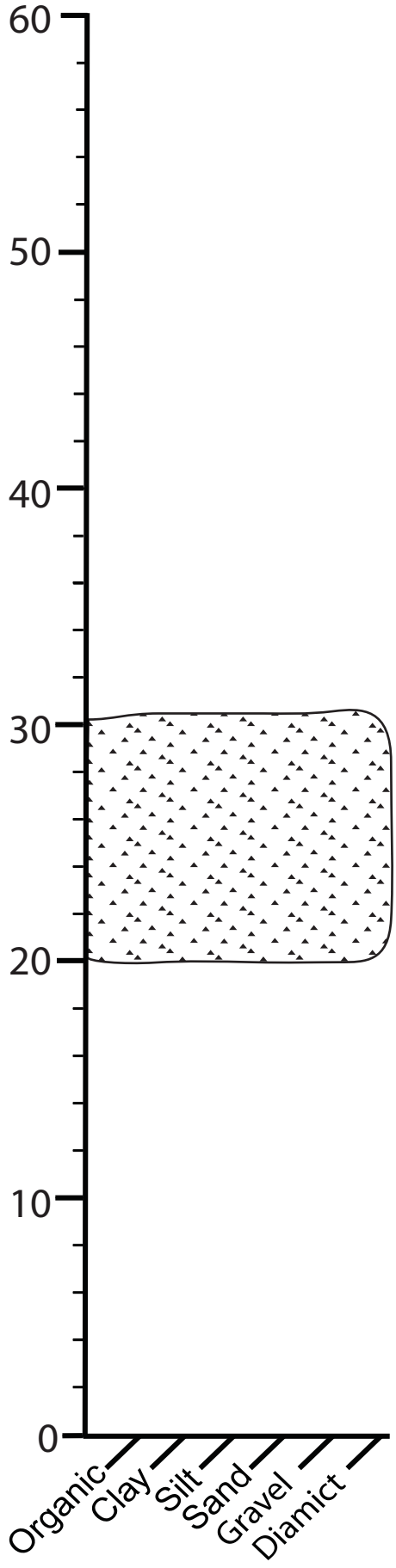
WR103

551569 m E
6938685 m N
540 m



Unit 1: Diamict. Interpreted as till.

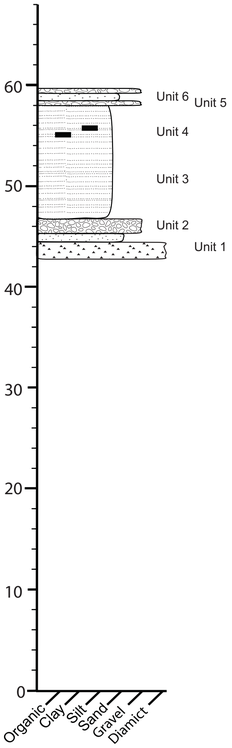
WR104
551558 m E
6938820 m N
527 m

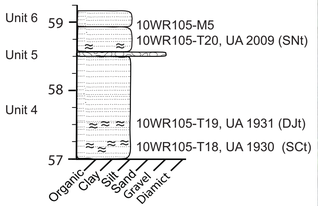


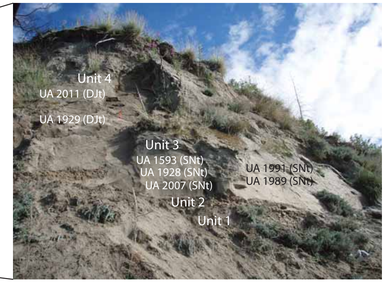
Unit 1: 10 m of consolidated diamict. 25-30% clasts. Various lithologies. Silty fine-grained sand matrix. Interpreted as till.

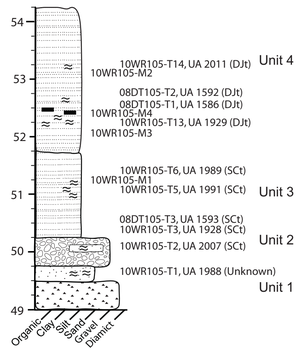
WR105

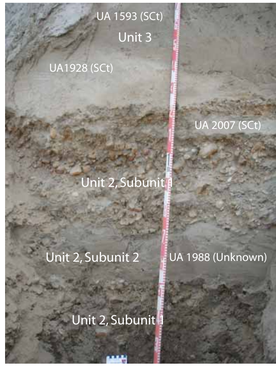
551562 m E
6939080 m N
549 masl











Unit 6: Silty fine-grained sand. Similar to Unit 4.

Unit 5: 5-10 cm thick gravel. Grades to medium-grained sand at upper contact. Lower contact is sharp with potential ice wedge psuedomorphs. Calcium precipitation rinds on clasts near the lower contact. Unit is faulted and turbated. Interpreted as fluvial deposit in gully.

Unit 4: Silty fine-grained sand. Weakly stratified. Variable thickness, from <1 m in gully headscarp to >5 m further down gully. Dark brown to grey. Organic-rich. Lower contact gradational with Unit 3. Thick tephra near lower contact. Tephra dips steeply towards the modern river, and thickens from ~5 cm in the headscarp, to >40 cm further down the gully. Evidence of burrowing and cryoturbation in the tephra and organics. Burrowing supported by rodent bones throughout. Interpreted as re-worked loess, organics and tephras in a gully.

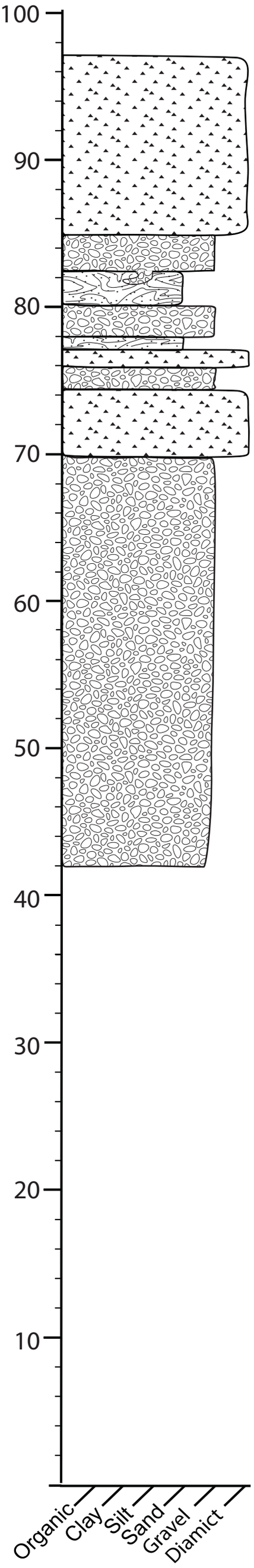
Unit 3: 2.5 m of silty fine-grained sand. Laminated in the bottom 0.5 m, but massive to weakly stratified above that. A few organic-rich beds and diffuse tephras. Interpreted as re-worked loess and tephras in a gully.

Unit 2, Subunit 2: 50 cm gravel. Oxidized throughout. Well rounded to angular clasts, average subrounded. Weakly stratified. Clast-supported. Coarse-grained sand matrix. Interpreted as a fluvial deposit.

Unit 2, Subunit 1: 15-25 cm of well sorted, medium-grained sand. Light grey. Laminated. At the lower contact, laminations drape underlying till clasts. Interpreted as a fluvial deposit.

Unit 1: 1 m of diamict, but continues below. 25-30% clasts. Clasts are well-rounded to subangular, average subrounded. Sandy-silt matrix. Consolidated. Clasts range from granule to cobble. Interpreted as till..

SC22
644939 m E
6763314 m N



Unit 6: Diamict. Weakly consolidated. Brown to light brown. Clasts range from pebble to large (>2 m) boulder, average pebble. Clast rich, up to 50%. Clasts are subrounded to subangular and striated. Some clasts are heavily weathered. Lower contact is sharp and likely erosive. Interpreted as weathered till.

Unit 5: Interbedded sand and gravel. The gravel beds are highly variable. Near the upper contact, the gravel is clast supported, with a silty-sand matrix. The finer-grained beds are interbedded and interlaminated, well sorted silt and coarse- grained sand, with no pebbles. These beds are faulted and folded. The gravel beds are loaded into the sand beds. Interpreted as non-glacial fluvial deposition.

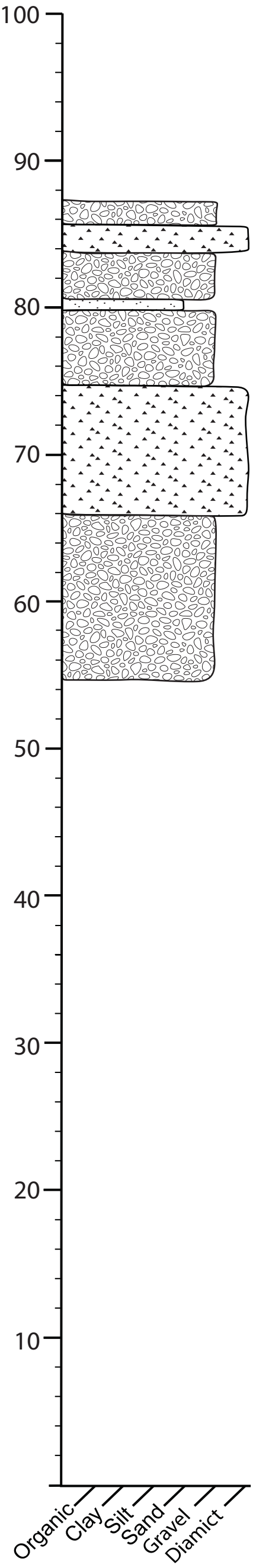
Unit 4: Diamict. 1.2 m thick. 40% well rounded to angular clasts. Matrix is fine- to medium-grained sand with some minor silt. Maximum clast size is 15 cm. Sharp lower contact, likely erosive. Massive. Consolidated. Interpreted as till or colluvium. If till, it could be associated with the same glaciation as Unit 2.

Unit 3: Gravel. Oxidized. Supported by a fine- to medium-grained sand matrix. Clasts are well rounded to subangular. Moderately sorted. Interpreted as non-glacial fluvial deposition.

Unit 2: Diamict. Dark grey. Strong fissility. Massive. More consolidated than overlying diamicts., but similar to Unit 4. 20-25% clasts. Sharp lower contact, likely erosive. Interpreted as till.

Unit 1: Gravel. Supported by a silty-sand matrix. Clasts range from pebble to boulder, average pebble. Moderately sorted. Clasts are well rounded to subangular and are ~65-70%. Lower contact is obscured. Interpreted as non-glacial fluvial deposition.

SC21
645034 m E
6763308 m N



Unit 5: Gravel. Supported by a fine- to coarse-grained sand matrix. Clast content is similar to the gravel in Unit 3. Oxidized matrix. Interpreted as non-glacial, fluvial deposition.

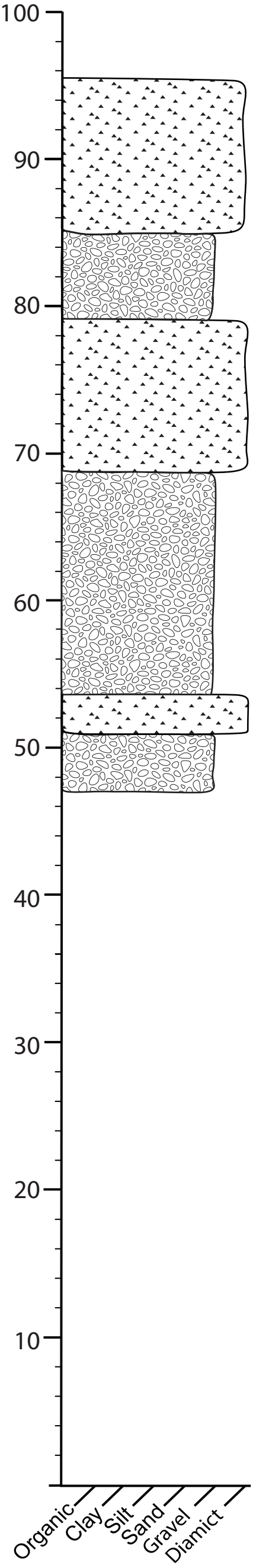
Unit 4: Diamict. Mostly obscured. Maximum clast size is boulder (>50 cm). Matrix is sandy-silt. Interpreted as till or colluvium.

Unit 3: Gravel. Supported by a medium- to coarse-grained sand matrix. Clasts range from pebbles to boulders, average pebble. Relatively high clast content and is almost clast supported in some areas. Weakly stratified, with interbedded well sorted, pebble dominated gravel and moderately sorted, pebble to cobble gravel. Many clasts have calcium carbonate precipitation. Matrix is oxidized throughout unit. One >50 cm thick, well sorted, fine-grained sand bed with a few weathered pebbles at ~80 m. Interpreted as non-glacial, fluvial deposition.

Unit 2: Diamict. Light grey. Strong fissility, but not well consolidated. Fractured. Sandy-silt matrix. Clasts range from pebble to boulder, average pebble. Clasts are 30-35% and are subrounded to subangular. Interpreted as weathered till.

Unit 1: Gravel. Some clasts are heavily weathered. Supported by a silty fine- to coarse-grained sand matrix. Abundant calcium carbonate precipitation on the bottom of clasts, and silt and clay caps on the top. Clasts are subrounded to angular, but more angular clasts may be weathering products. Clasts range in size from pebble to boulder, average pebble. Weathering and calcium carbonate precipitation increase with height in the unit. Moderately to poorly sorted. Appears to be massive, but exposure makes it difficult to see structures. Interpreted as non-glacial fluvial deposition.

SC20
645030 m E
6763626 m N



Unit 6: Diamict. Silty-sand matrix with minor clay. Massive. Consolidated. Not well exposed. Maximum clast size is 1 m. Interpreted as till.

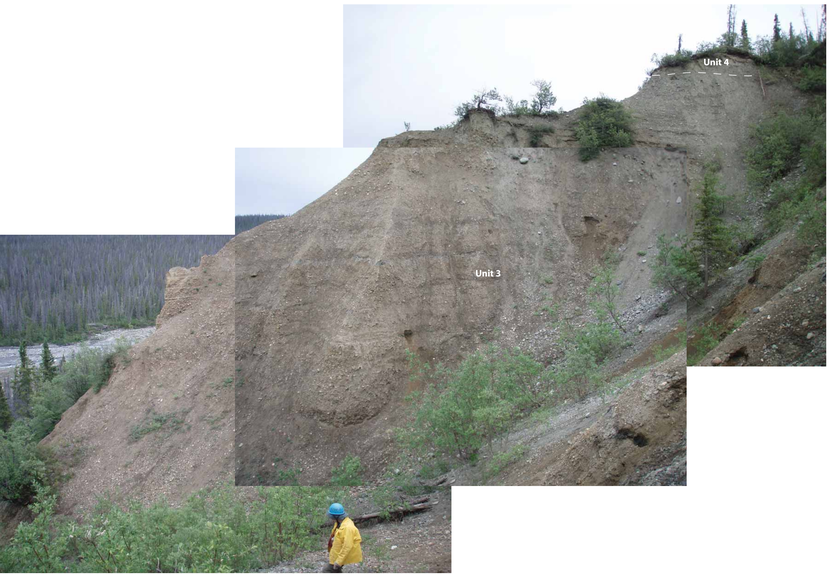
Unit 5: Gravel. Less oxidized and weathered than the underlying gravel units. Not well exposed. Interpreted a non-glacial fluvial deposition.

Unit 4: Diamict. Clayey-silt matrix. 25% clasts. Massive. Consolidated. Not well exposed. Interpreted as till.

Unit 3: Gravel. Clasts range from pebble to boulder, average cobble. Weathered clasts and oxidized matrix. Some clasts are completely disintegrated. Striated clasts. Moderately sorted. Supported by a fine- to coarse-grained sand matrix. Clasts are well rounded to subangular, average well rounded. Several clay, silt and fine-grained sand lenses near the lower contact. One of these lenses is oriented vertically. Lower contact is sharp and likely erosive. Interpreted as non-glacial fluvial deposition.

Unit 2: Diamict. Dark grey. Overconsolidated. 20% well rounded to subangular clasts that range in size from pebble to boulder. Matrix is silty-sand. Some bullet-shaped and striated clasts. Lower contact is sharp and likely erosive. The upper 5 cm of the diamict is oxidized. Interpreted as till.

Unit 1: Gravel. Both the clasts and the matrix are coarser-grained and less oxidized and weathered than in the overlying gravel in Unit 3. Supported by a medium- to coarse-grained sand matrix. Poorly sorted, with clasts ranging in size from pebble to boulder. Clasts are well rounded to subangular, average subrounded.



View south from the downstream (north) end of SC6, in the gully separating it from SC7. Fluvial weathered and oxidized sand and gravel in Unit 6 is exposed for >15 m below the till in Unit 4

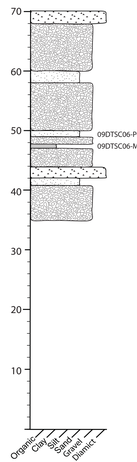
Disintegrated clast in weathered gravel in Unit 3

Consolidated, poorly sorted, massive diamict in Unit 4, interpreted as till

Weathered clast in till in Unit 2

Well sorted pebble to cobble gravel in Unit 3

SC6
644765 m E
6764426 m N



Unit 4: Diamict. Massive. Clasts are pebble to boulder, average cobble. 20-25% well rounded to angular clasts. Consolidated. Interpreted as till.

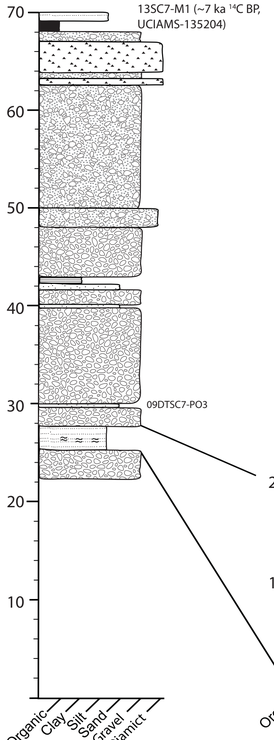
Unit 3: Gravel. The matrix and clasts are weathered and oxidized at the bottom, and is less oxidized towards the upper contact. Supported by a silty-sand matrix. Clasts are well rounded to subrounded. Clasts have calcium carbonate precipitation rinds on their bottoms. Some clasts are frost-shattered or disintegrated. The gravel coarsens and is less weathered towards the upper contact. There are multiple clay and silt beds that are ~10 cm thick. The thickest finer-grained horizon is 2 m of ~5 cm thick, interbedded medium- to coarse-grained sand. This horizon is between 58-60 m elevation, but dips downstream considerably. The lower gravel and sand beds are faulted. The lower contact is sharp and likely erosive. Interpreted as non-glacial, fluvial sediment.

Unit 2: Diamict. Massive. Consolidated. 15-20% clasts. Maximum clast size is 2 m. Clayey-silt matrix. Many of the clasts are extensively weathered. Matrix is also weathered. Interpreted as till.

Unit 1: Sand and gravel. Heavily oxidized and weathered. Supported by medium- to coarse-grained gravel. Moderately to poorly sorted. Not sufficiently exposed to observe stratification or other structures. Several silty, fine-grained sand beds that are ~5 cm thick, with no organics. Oxidation decreased towards the upper contact. Sand bed at the upper contact is composed of well sorted, medium-grained sand. The lower contact of the sand bed is sharp. Interpreted as non-glacial fluvial sediment.

Coarse-grained outwash in Unit 4

SC7
644701 m E
6764560 m N



Unit 7: Interbedded gravel, peat and silty-sand. Interpreted as Holocene fluvial sediment and loess. A tephra in the loess is likely White River tephra but was inaccessible.

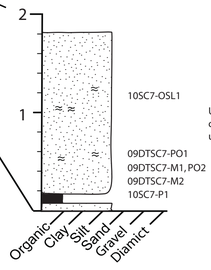
Unit 6: Diamict. Light brown, poorly sorted, massive. Interbedded lower contact with the gravel in Unit 4. Abundant striated clasts. Inaccessible, but similar to diamict units at other exposures downstream. Interpreted as till.

Unit 5: Gravel. Sorting varies throughout, but is mostly poorly sorted. Unoxidized. Sand matrix supported. The lower contact is obscured, but appears sharp in other exposures further downstream. Interpreted as outwash.

Unit 4: Poorly sorted, coarse-grained gravel. Supported by a silty fine- to coarse-grained sand matrix. Clasts range from pebble to boulder, average cobble. High clast content (>50%). Some clasts are weathered and have calcium precipitation on their lower sides, but this unit is not as weathered as the underlying oxidized gravel. The lower contact is sharp and likely erosive. Interpreted as proximal deglacial outwash.

Unit 3: Oxidized gravel. Laterally and vertically variable, but mostly moderately sorted gravel supported by a coarse-grained sand matrix, interbedded with thinner sand beds. Some of the gravel beds are clast supported. Clasts generally range from pebble to cobble, average pebble. There are a few ~50 cm sand beds, with thin silt and clay beds. Two clay beds are at ~42 m and 40 m and likely correlate to those at a similar elevation at SC6. There are a few fine-grained debris flow beds in the gravel. Clasts have a maximum size of pebble. The debris flow beds are ~50 cm thick with a sandy-silt matrix. The sand and gravel beds are faulted above and below the debris flow bed. The lower contact of the unit is sharp and likely erosive. The lower gravel bed below Unit 2 fines upwards to the contact, with a moderately sorted, 10-12 cm thick silty-sand bed with well rounded pebbles and undulating coarse-grained sand and silt lenses. The gravel below this sand bed is supported by medium- to coarse-grained sand matrix, with pebble- to cobble-sized, subrounded to subangular clasts. The matrix and clasts are less weathered than the gravel beds higher in the unit. The lower contact above Unit 2 is sharp and likely erosive. Interpreted as non-glacial fluvial deposition.

Unit 1: Oxidized gravel. See Unit 3 description.



Unit 2: Well sorted, silty fine-grained sand. Massive. Weathered with light brown, light grey and dark grey colours. A few pebbles and cobbles. There are diffuse tephras throughout the unit. The top of the unit is weakly stratified. The lower contact of Unit 2 is cryoturbated by ~35 cm, with a potential ice wedge cast.

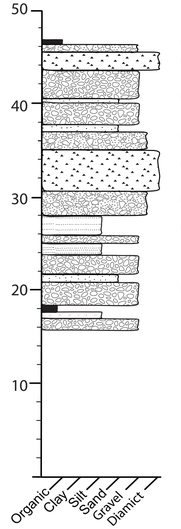
Contact between massive, consolidated diamict in Unit 4 and coarse-grained, moderately sorted gravel in Unit 5

Contact between Units 4 and 6 on upstream end of exposure.

Sand and diamict beds in Unit 2.

Organics sampled (09SC08-M1) from Unit 1.

SC8
644713 m E
6764826 m N



*Note: lower beds are dipping and have varying heights

Unit 8: Moderately sorted gravel with pebbles to cobbles. Erosive lower contact. ~1-1.5 m of organic-rich sediment and peat at the top.

Unit 7: Diamict observed from below. Correlates to the diamict at the top of SC9. Interpreted as till.

Unit 6: Gravel. Moderately sorted with pebbles to boulders supported by a medium to coarse-grained sand matrix. Clasts are well rounded to subangular. A few of the clasts are heavily weathered, but most are not. Matrix is oxidized. Sand beds are dark brown silty sand with a ~5% pebbles. The lowest sand bed, at the lower contact, is 75 cm thick, weakly stratified and variable oxidized. The lower contact of this unit is sharp, with the upper 50 cm of the till having zones of more intense oxidation. Clast supported, weakly imbricated sub-parallel to the modern stream (ENE). Interpreted as non-glacial fluvial sediment.

Unit 5: Gravel. Weakly fines upwards. Matrix supported, but high clast content. Maximum clast size is 1.5 m. Clasts are subrounded to subangular, average subangular. The matrix is fine- to coarse-grained sand. The gravel is moderately sorted and massive with various lithologies. The upper 80 cm fines rapidly, but is moderately sorted. The upper contact has organic-rich, deformed, interbedded and interlaminated silt and sand beds. The upper-most silt bed rapidly coarsens into the well sorted gravel above in Unit 6. Interpreted as retreat outwash associated with the till in Unit 4, with a conformable upper contact.

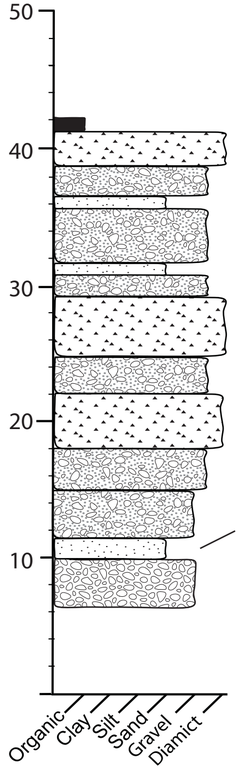
Unit 4: Diamict. Clast-rich (up to 40% clasts) and coarse-grained at the upper contact. Clasts are mostly pebbles but up to boulders-sized. Silty-sand matrix. Massive. Dark grey. Clasts are subround to subangular. Upper 50 cm of the diamict has zones of intense oxidation. Interpreted as till.

Unit 3: Unoxidized coarse-grained gravel. Coarsens upwards from clast supported, moderately sorted, pebble to cobble gravel with a few coarse-grained sand beds, to mostly clast supported, moderately sorted pebble to boulder (avgerage cobble) gravel with subround to subangular clasts. Some sections are matrix supported. The matrix is composed of pebbles with some coarse-grained sand. The frequency of boulders increases at the upper contact with Unit 4. High lateral variability. Sharp lower contact, likely erosive. Interpreted as advanced outwash associated with the till in Unit 4.

Unit 2: Interbedded and laminated sand, silt and clay. Sand is fine- to coarse-grained. Laminations are dominantly silt and clay. There are no visible organics. Several ~25-50 cm diamicton beds are interbedded with the finer-grained beds. The upper contact with the gravel in Unit 3 is loaded. Some of the beds are heavily deformed and faulted. Some ripples and normal grading observed. The lower contact is visible for over 40 m, and has an apparent dip ~1°. Lower contact is interbedded with thin gravel beds from Unit 1. Interpreted as glaciolacustrine, associated with advance outwash and till in Units 3 and 4.

Unit 1: Interbedded gravel, sand and silt. The gravel is heavily oxidized with several clasts completely weathered. The gravel is clast supported, has a medium- to coarse-grained sand matrix with subrounded to subangular clasts, some of which are fractured. The gravel beds are loaded into the finer-grained beds. There are multiple organic-rich beds in the finer-grained material. Sample 09SC08-M1 was collected from a clayey-silt bed near the bottom of the exposure. Planer and trough cross-bedding observed in the sand beds. Interpreted as non-glacial fluvial and overbank floodplain deposition.

SC9
644748 m E
6764920 m N



Unit 7: Diamict. Weakly consolidated. Light brown exposed. Clast-rich (>35%). Medium- to coarse-grained sand matrix. Interpreted as till.

Unit 6: Interbedded gravel and sand. Gravel is moderately sorted and supported by a coarse-grained sand matrix. Clasts are pebble to bounlder. Sand layers are bedded and laminated fine- to medium-grained sand with minor silt. Interpreted as non-glacial fluvial deposit.

Unit 5: Diamict. Silty fine- to medium-grained sand matrix. 20-25% clasts. Subrounded to subangular clasts, average subrounded. Dark grey when exposed. Pebbles to cobbles, average pebbles. One heavily deformed bed is dipping 45 degrees to the north. This unit may be slumped. Interpreted as till.

Unit 4: Coarse-grained gravel. Interpreted as proximal glaciofluvial deposit.

Unit 3: Diamict. Interpreted as till.

Unit 2: Coarse-grained gravel. Massive. Interpreted as advance glaciofluvial deposition associated with Unit 3.

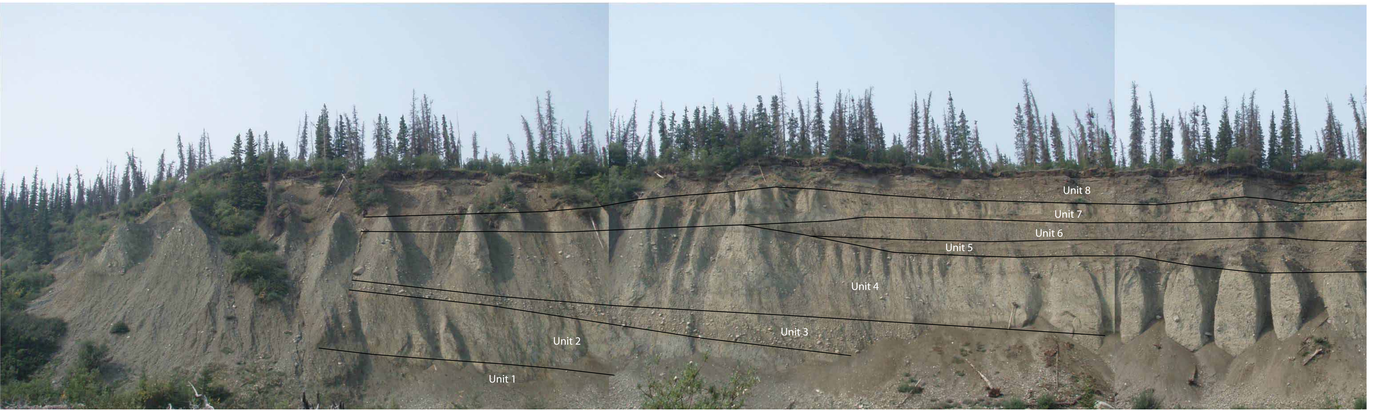
Unit 1b: Interbedded sand, silt and minor clay beds. Sand beds are weakly stratified, fine- to medium-grained, well sorted with few pebbles and cobbles. Maximum thickness of beds is 70 cm. Clay beds are rippled and deformed from slumping. No visible organics.

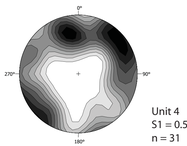
Unit 1: Weathered gravel with organic and weakly stratified sand beds. The gravel in the top half of the unit is less weathered. Moderately to well sorted. Coarsens upwards towards the upper contact. Calcium carbonate cement between some clasts. Matrix and clasts are heavily oxidized. Clast supported. Clast size ranges from pebble to coblle, average pebble. Matrix is well sorted, coarse-grained sand.

Lower contact of Unit 1 covered.

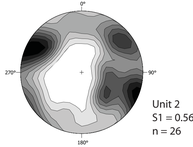
Sand bed in Unit 1

Gravel in Unit 1



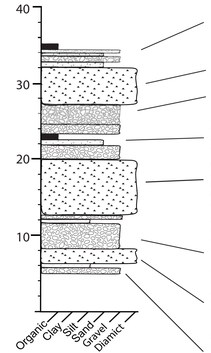


Unit 4
S1 = 0.525
n = 31



Unit 2
S1 = 0.562
n = 26

SC10
644715 m E
6765119 m N



Lower contact of Unit 1 covered.

Unit 8: Two subunits. Unit 8a is 1-2 m of interbedded and laminated fine- to medium-grained sand, gravel and silt. The gravel beds are well sorted, clast supported and pebble-rich. Silty fine- to medium-grained sand matrix, with no observed cobbles or boulders. Beds range from 10-80 cm thick. Some organics at the lower contact. Interpreted as Holocene fluvial deposits. Unit 8b is ~80 cm of platy fibric to mesic peat. Most of this peat is frozen. Interpreted as early- to mid-Holocene organic accumulation.

Unit 7: Diamict. Light brown. Clast-rich, with a potential lag at the upper contact. Clasts are mostly pebble, but range up to boulders. Silty-sand matrix. Unconsolidated relative to Units 4 and 2. Interpreted as till.

Unit 6: Gravel. Well sorted and stratified gravel. Less oxidation at the top of the unit. Best exposed and described at SC11 and SC12. Interpreted as advance outwash associated with Unit 7.

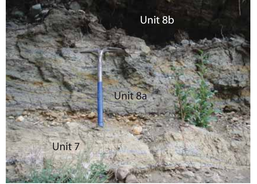
Unit 5: Interbedded sand and gravel. Gravel is oxidized throughout. The unit thickens considerably downstream and is eroded completely on upstream end. Beds dip downstream more at the lower contact than the upper contact. Interpreted as non-glacial fluvial deposits.

Unit 4: Diamict. Light grey colour. Clasts are subround to subangular, average subround and oblate. 25-30% clasts with various lithologies. More cobbles and boulders than Unit 2. Abundant striated clasts with fractured lee ends. Massive. Silty-sand matrix. Lower contact is clast-rich with mostly pebbles, but some cobbles and boulders. Lower contact consists of a few cryoturbated or glaciotectonized beds, and <50 cm long injection features into the sand filled with diamict. Interpreted as till.

Unit 3: Two subunits. The bottom 3 m is fining upwards, moderately sorted gravel with abundant boulders at the base. This subunit has a coarse-grained sand matrix with minor silt. It is poorly sorted and has well rounded to angular clasts, average subangular. The top 1 m is unoxidized, interbedded sand and gravel. The top of the unit has 25 cm of sand interbedded with <10 cm thick clay and silt beds. The lower contact of Unit 3 is sharp and marked by a clear colour and textural change. Interpreted as proximal, deglacial glaciofluvial outwash associated with Unit 2.

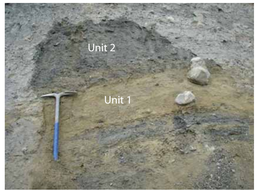
Unit 2: Diamict. Finer-grained clasts than Unit 4. Lower contact is sharp and undulates. Silty-sand matrix. Clasts are granule to boulder, average pebble, and are angular to subrounded, average subangular. ~30% clasts, with abundant small pebbles. The clasts in this unit are finer-grained than in Unit 4. Unit is dark grey exposed. The top 25 cm of the unit is oxidized and there is some oxidization along fractures and above the lower contact. The boulders at the lower contact are loaded into the sand beds in the underlying unit. Interpreted as till.

Unit 1: Gravel and sand. Unit dips to the right downstream. The upper contact of the gravel is interbedded with sand, silt and clay. The beds are deformed, brecciated, faulted and slighty oxidized. The sand at the top of the unit is well sorted fine- to medium-grained sand with rare pebbles. It is variably oxidized and has multiple faults and cracks with finer-grained matrial injected in. The contact between the two subunits is interbedded. Interpreted as advance glacial outwash and proximal glaciolacustrine deposits. Glaciotectonism is evident throughout the upper sand bed.

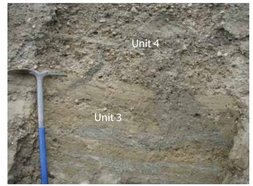


Contacts between Units 7, 8a and 8b

Contact between Units 2 and 3



Lower contact of Unit 2, and underlying Unit 1



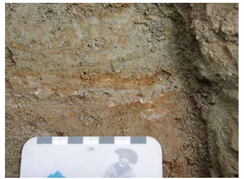
Contact between Units 3 and 4

Injection of Unit 2 into Unit 1

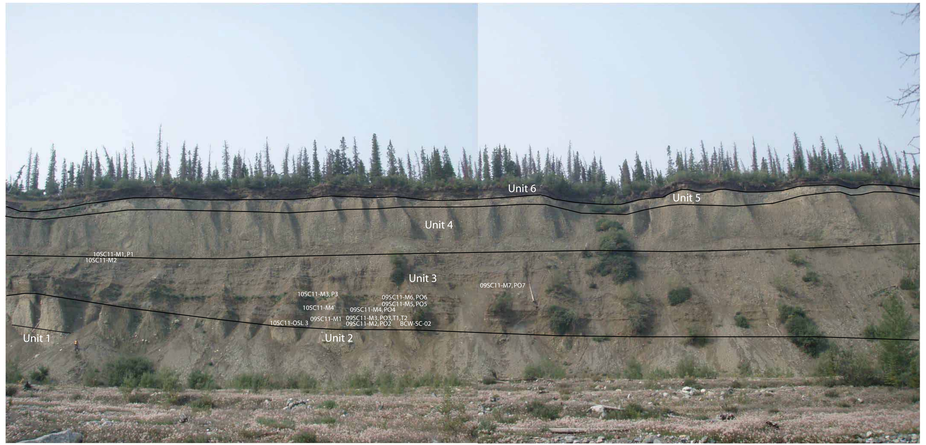
09SC11-M5 (lower) and M6 (upper)

09SC11-OSL3

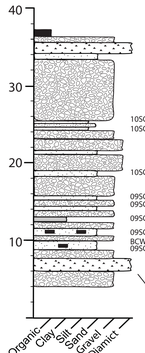
09SC11-T2 (UA 1597)



09SC11-T1 (UA 1598)



SC11
644761 m E
6765307 m N

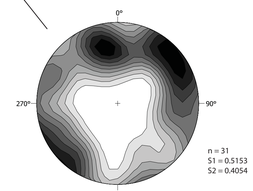


10SC11-M1,P1
10SC11-M2

10SC11-M3,P3

09SC11-M7, PO7
09SC11-M6, PO6
09SC11-M4, PO4
09SC11-M3, PO3
09SC11-M2, PO2

09SC11-T3 (UA 1599; Unknown)
09SC11-M5, PO5 (~36 ka ^{14}C BP, UCIAMS-74727)
10SC11-M4
09SC11-T1 (UA 1598; Unknown)
09SC11-T2 (UA 1597; Unknown)
BCW-SC-02
10SC11-OSL3 (~24 Ka)
BCW-SC-02 (~36 ka ^{14}C BP, UCIAMS-112439)



n = 31
S1 = 0.5153
S2 = 0.4054

Unit 6: Interbedded gravel and peat. Interpreted as non-glacial, fluvial sediment.

Unit 5: Diamict. Interpreted as till.

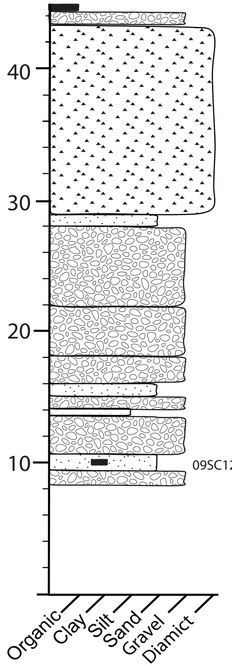
Unit 4: Gravel. Massive. Thickens downstream and incises the underlying fluvial sediment with an erosive lower contact. Gravel is clast supported, with a coarse-grained sand matrix. Moderately sorted. Clasts are pebble- to boulder-sized, average pebble. Well rounded to subangular clasts. A few 30 cm thick, coarse-grained sand lenses. Gravel is unoxidized with medium-grained sand beds with a few <5 cm silt and clay beds, separated by a well sorted, massive, coarse-grained sand. Interpreted as advance outwash associated with Unit 5 This unit looks like an advance lake. The lower contact of the unit is obscured so cannot say if conformable or not. No oxidation, organics or evidence of weathering.

Unit 3: Interbedded gravel and sand. Organic-rich beds and lenses are abundant in the lower half of the unit, with few in the top ~5 m. Gravel is a matrix supported, moderately to well sorted with a medium- to coarse-grained sand matrix. Clasts are pebble- to cobble-sized, average pebble. Gravel beds are massive. Clasts are angular to well rounded, average subangular. There are lenses of clast supported gravel. Gravel beds are finer-grained and thinner near the upper contact. Weak imbrication to the north, downstream. Sand beds are interbedded and interlaminated, composed of well sorted, silty fine-grained sand with <5% pebbles and pebble-rich lenses. The thickest sand bed is ~80 cm thick. Average sand bed thickness is ~20 cm. Sand beds thin and have lower organic content upwards. Lower contact is sharp, with a coarse-grained gravel bed. There are several ~40 cm thick, well sorted, laminated silty-clay beds. Both gravel and sand beds are oxidized, with increasing oxidation with height above 18 m. Above this, the gravel beds are coarser-grained, the sand beds are thicker and deposits lack weathering. Interpreted as non-glacial, fluvial sediment.

Unit 2: Diamict. Interpreted as till.

Unit 1: Interbedded sand and gravel. Sand bed has multiple silt lenses and is heavily deformed. Interpreted as advance outwash.

SC12
644717 m E
6765423 m N



09SC12-M1,PO1 (~35 ka ^{14}C BP, UCIAMS-112441)

Unit 4: Undescribed gravel. Interpreted as Holocene fluvial deposition.

Unit 3: Inaccessible, but appears light brown, similar to upper diamict further upstream, but more consolidated and fewer clasts. Interpreted as till.

Unit 2: Inaccessible. Moderately to well sorted gravel. Pebble- to cobble-sized clasts. Variably oxidized, but less than Unit 1. Gradational lower contact. Upper contact has massive, moderately to poorly sorted, pebble to boulder gravel bed. Clasts in this bed are subrounded to angular, average subangular. Larger boulders are evenly dispersed. Unit interpreted as advance outwash associated with Unit 3.

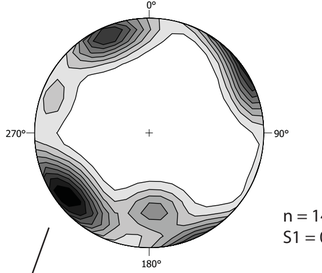
Unit 1: Coarser than lower gravel at SC11 and fewer organics. Oxidation decreases at 18.2 m and there are fewer fine beds upwards. Well sorted. Pebble- to cobble-sized clasts. Medium- to coarse-grained sand matrix. Horizontal planer bedding. Well rounded to subangular clasts, average subrounded. Interpreted as fluvial deposition in a non-glacial setting.

Location of 09SC12-M1

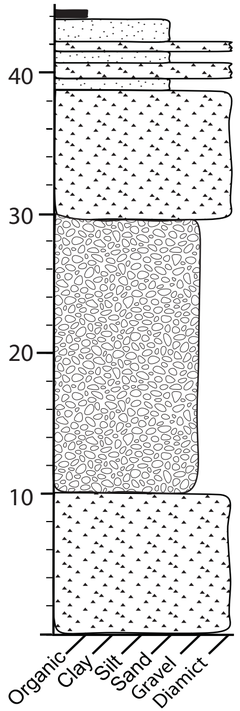
09SC12-M1

SC13

644700
6765856



n = 14
S1 = 0.5898



Unit 4: Two metres of interbedded coarse- and medium-grained, pebble-rich sand. Glaciotectonized sand beds with steeply dipping, deformed beds. Lower contact is interbedded with underlying diamict, with dipping beds erosively truncated by a diamict indentical to the underlying unit. Interpreted as fluvial sediment.

Unit 3: Diamict. Silty-sand matrix. Light grey. Subangular to subround clasts. Average rounding is sunangular. Maximum clast size is 2 m, but there is a 5 m boulder out of place at the bottom of the section that is likely from this unit. Average clast size is pebble. ~30-35% clasts. Clast % increases near the upper contact to 45-50%. Abundant striated, keeled and faceted clasts. Interpreted as till.

Unit 2: Bedded to massive, well-sorted gravel. Similar to Unit 2 at SC12, but coarser-grained in the bottom 2-3 m and oxidized to the upper contact. Interpreted as advance outwash.

Unit 1: Diamict. Medium- to coarse-grained sand matrix, massive, pebble to boulder clasts, average pebble. Clasts are subrounded to subangular, average subrounded. Maximum clast size is 1 m. Some calcium concentration on the bottom of clasts. ~35% clasts, pockets with fewer clasts. Appears more clast rich than at SC11. Interpreted as till.