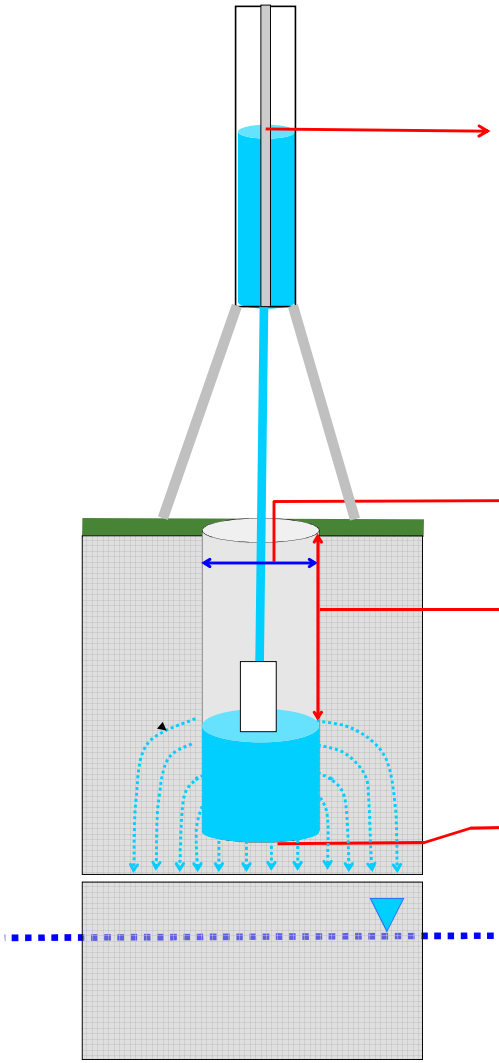
WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

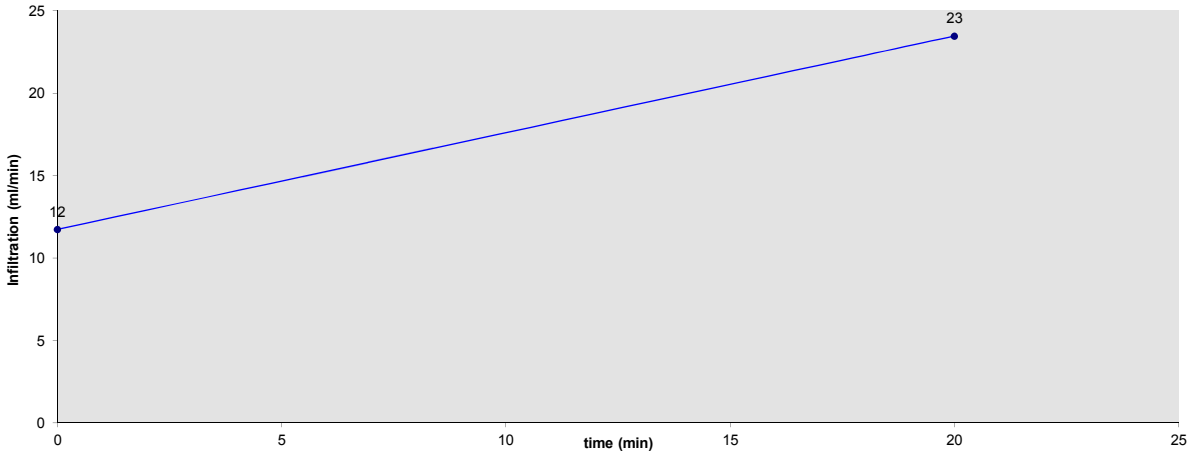
Location **Excavation pit 1 - Adjacent undistubed ground - 20/01/2012**



field data

	mm	min	Q/min
1	556	0	0
2	602	20	23
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.39	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **4.0 * 10 -5 m/s** = **343.7 cm/day**

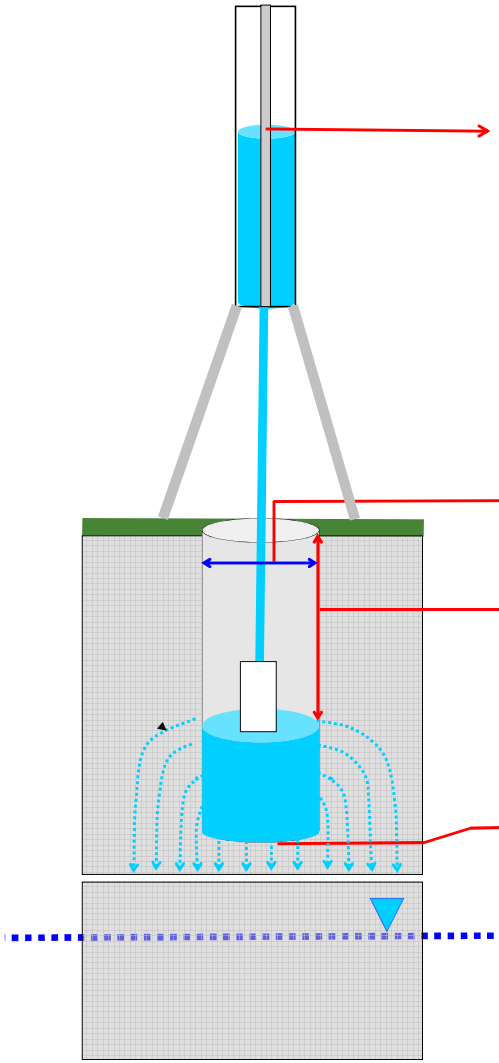
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site UHCMS

Date

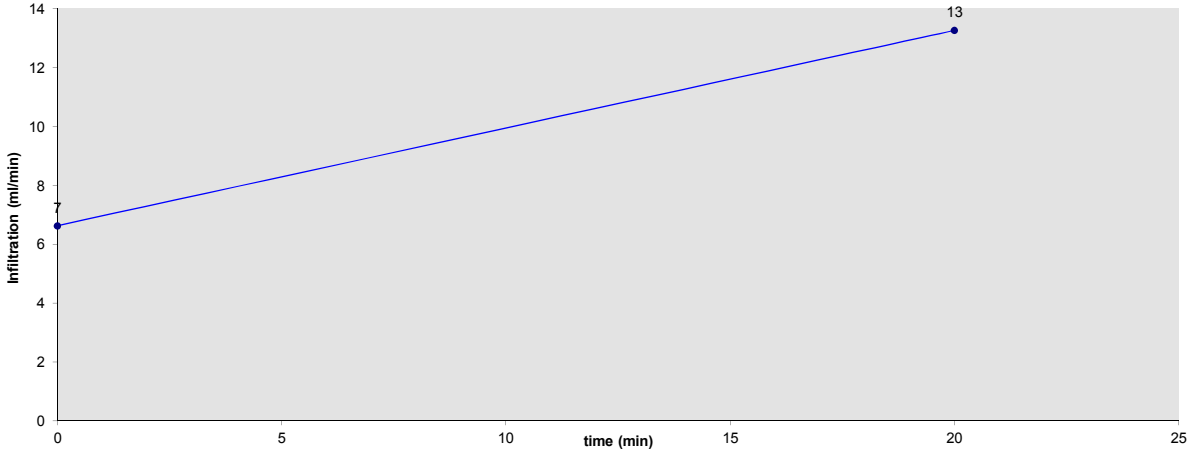
Location Excavation pit 1 - In pipe trench - 20/01/2012



field data

	mm	min	Q/min
1	565	0	0
2	591	20	13
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
1	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.22	ml/sec
effective radius of well "r"	2	cm
value "ho"	1	cm
value "h" = H-ho	4	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: 2.0 * 10 -5 m/s

174.2 cm/day

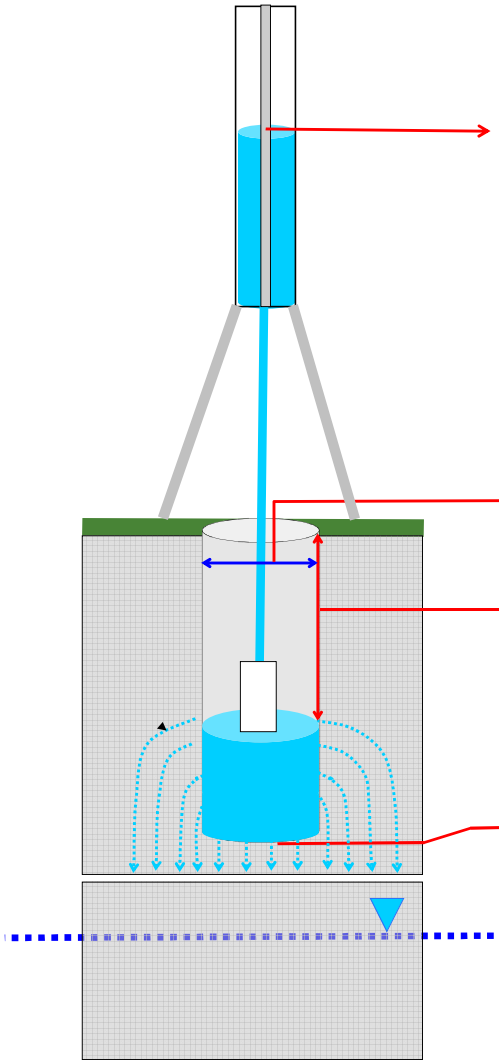
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

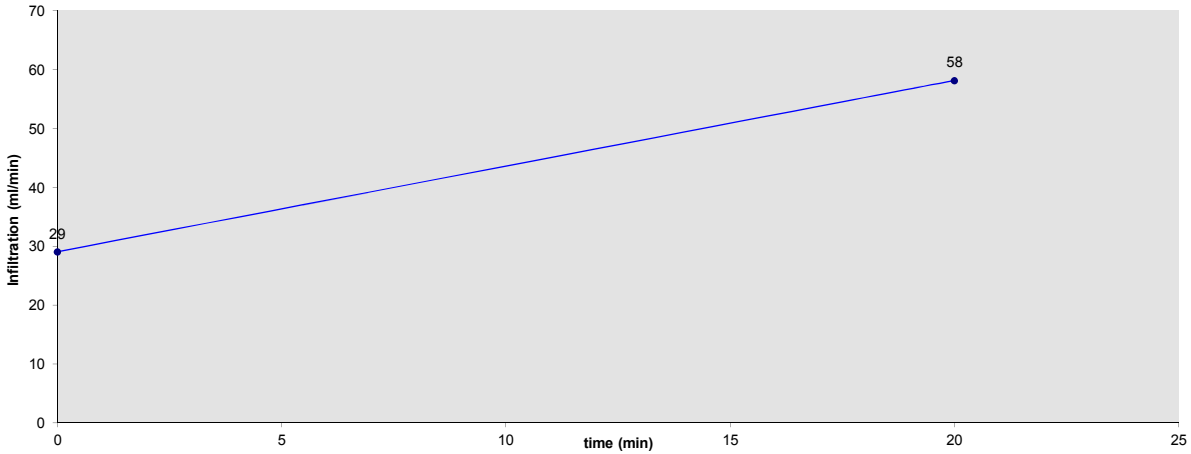
Location **Excavation pit 2 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	632	0	0
2	746	20	58
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.97	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: 9.9 * 10 -5 m/s

851.7 cm/day

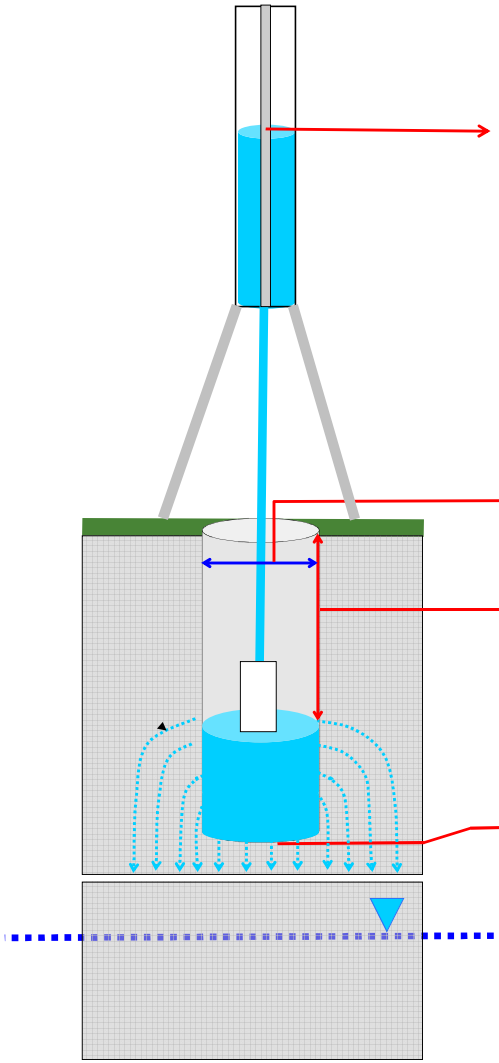
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

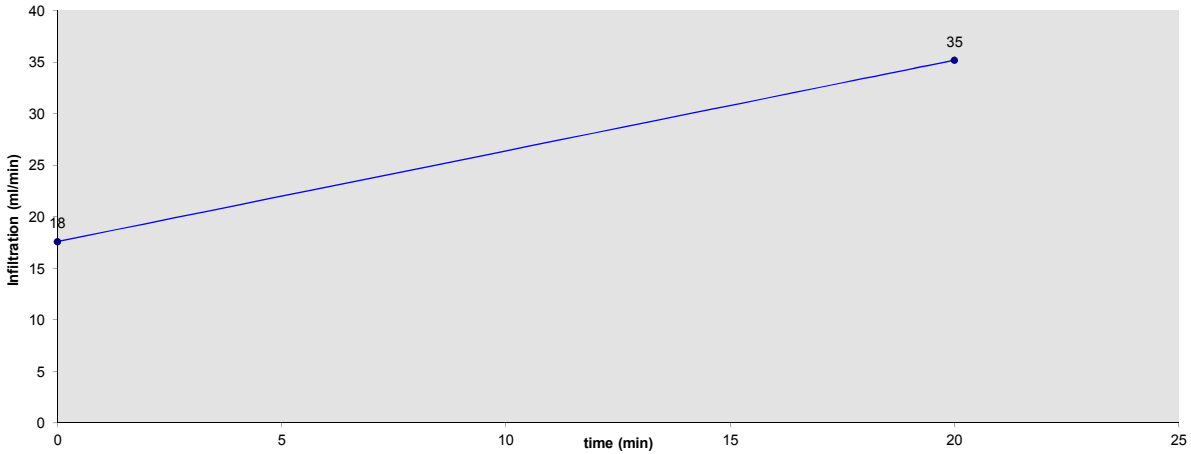
Location **Excavation pit 2 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	674	0	0
2	743	20	35
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.59	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **6.0 * 10 -5 m/s** = **515.5 cm/day**

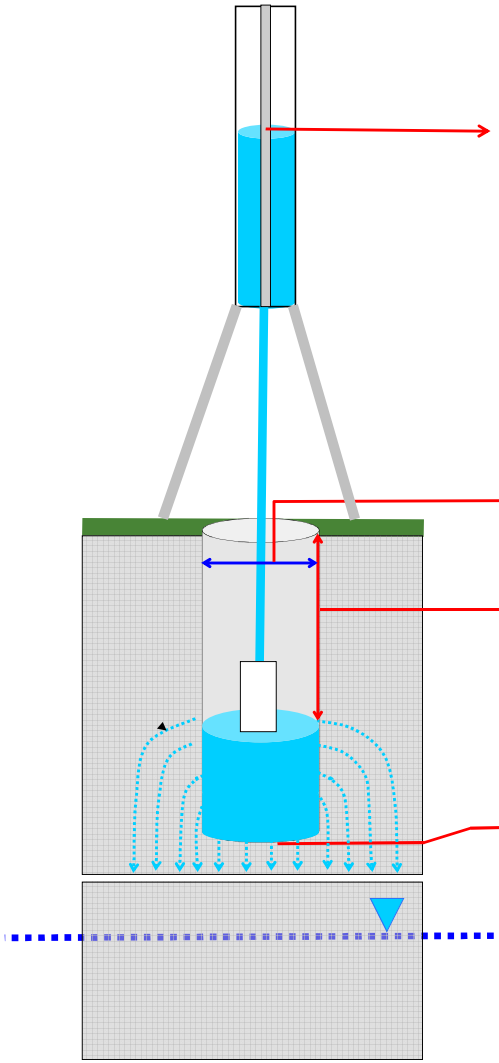
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

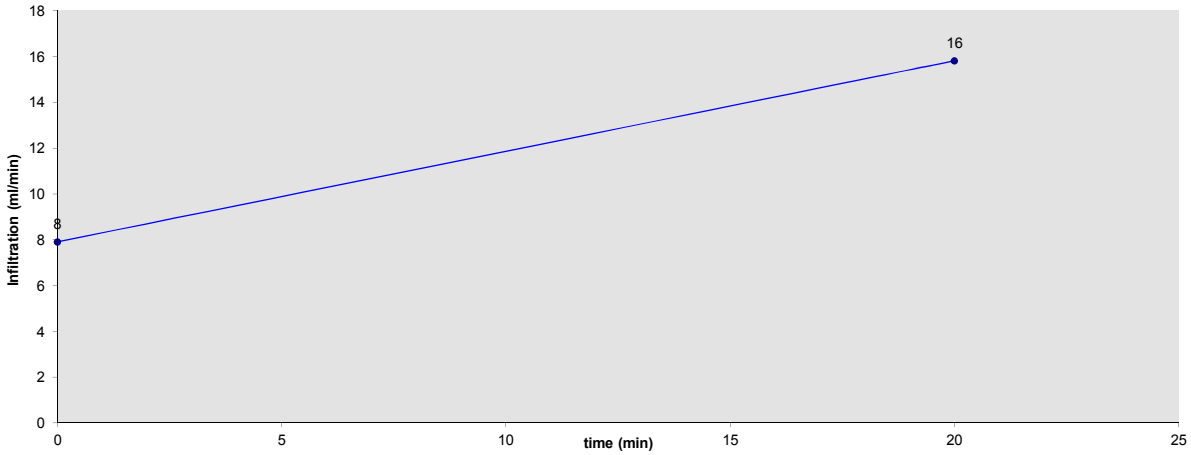
Location **Excavation pit 3 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	603	0	0
2	634	20	16
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.26	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **2.7 * 10 -5 m/s** = **231.6 cm/day**

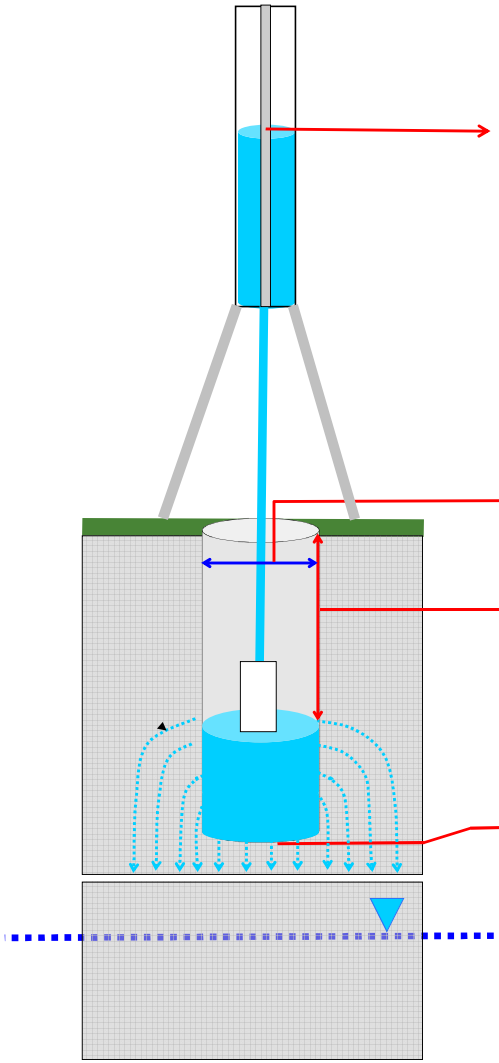
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

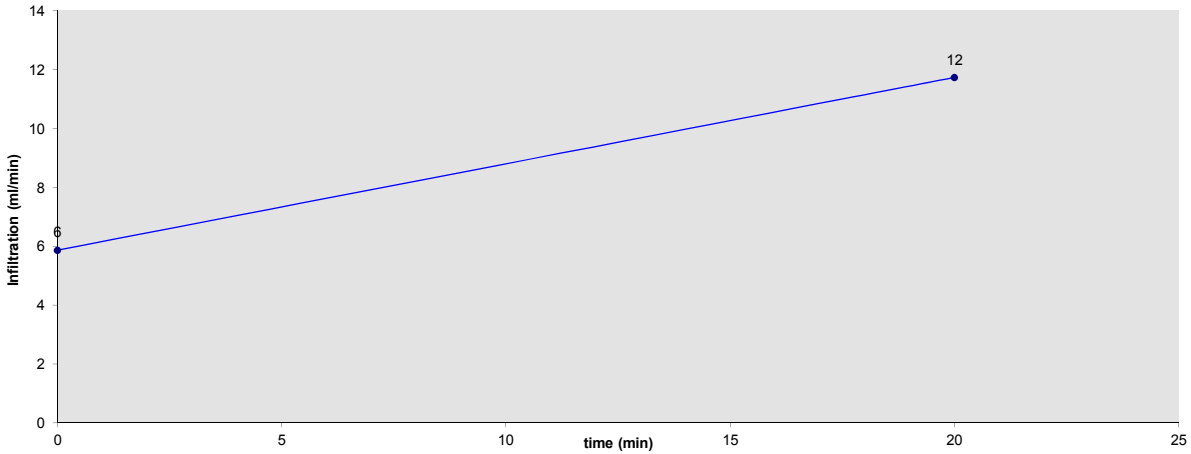
Location **Excavation pit 3 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	712	0	0
2	735	20	12
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.20	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **2.0 * 10^{-5} m/s** = **171.8 cm/day**

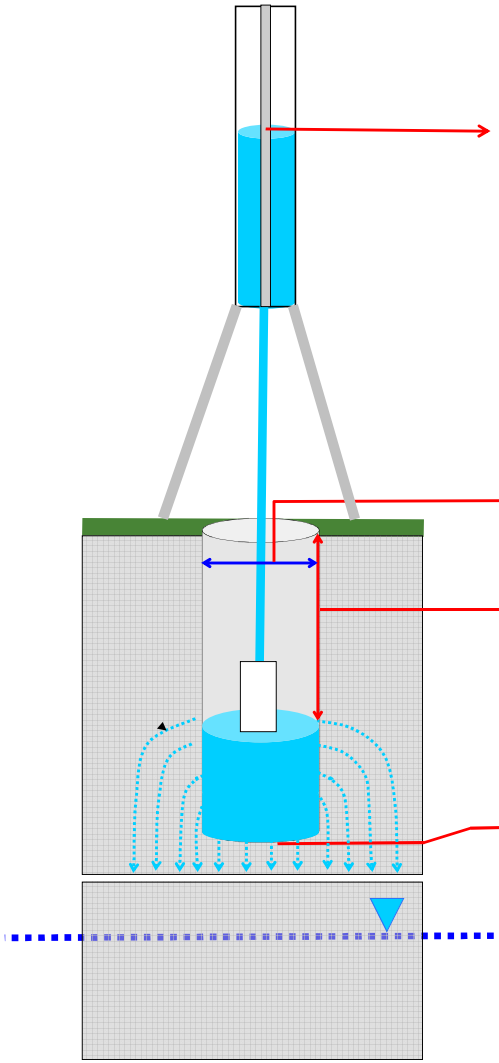
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

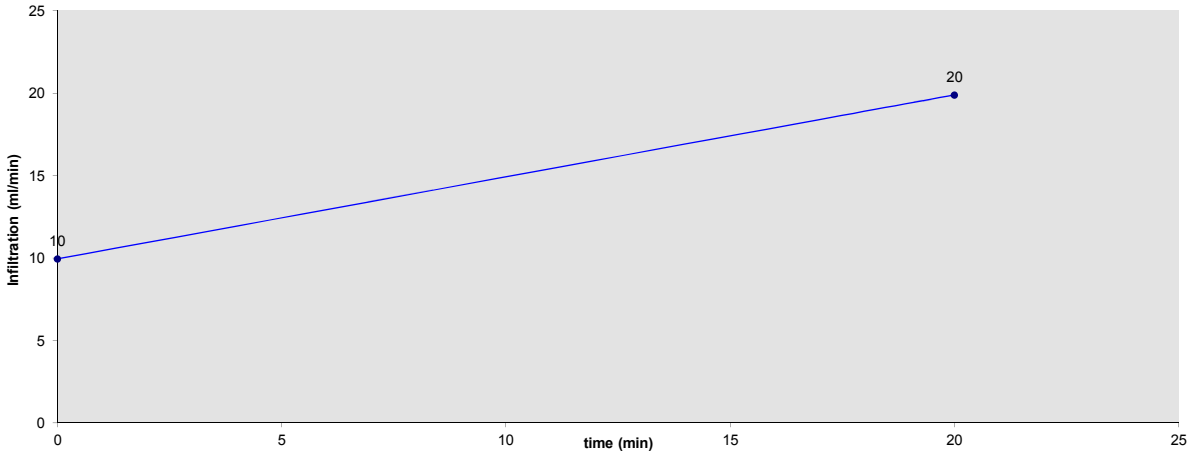
Location **Excavation pit 6 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	568	0	0
2	607	20	20
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.33	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **3.4 * 10 -5 m/s** = **291.4 cm/day**

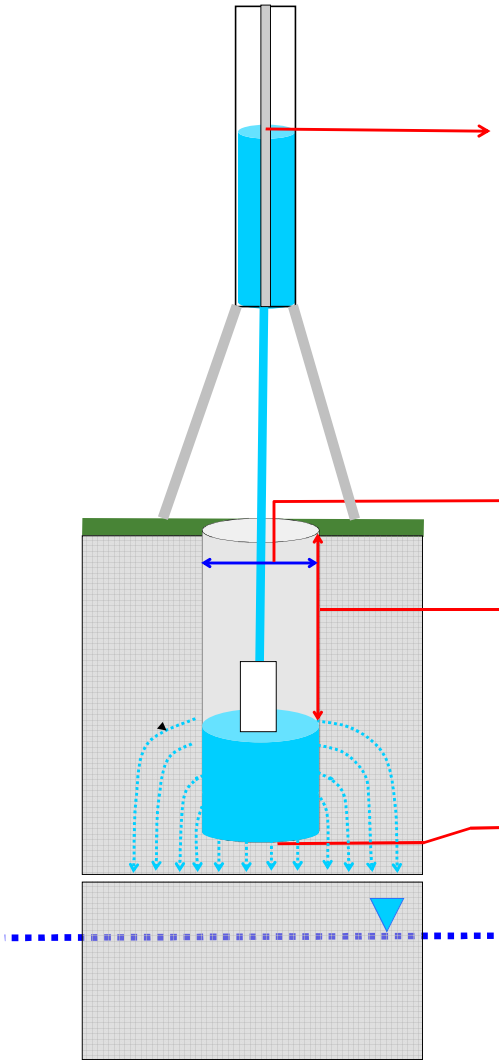
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

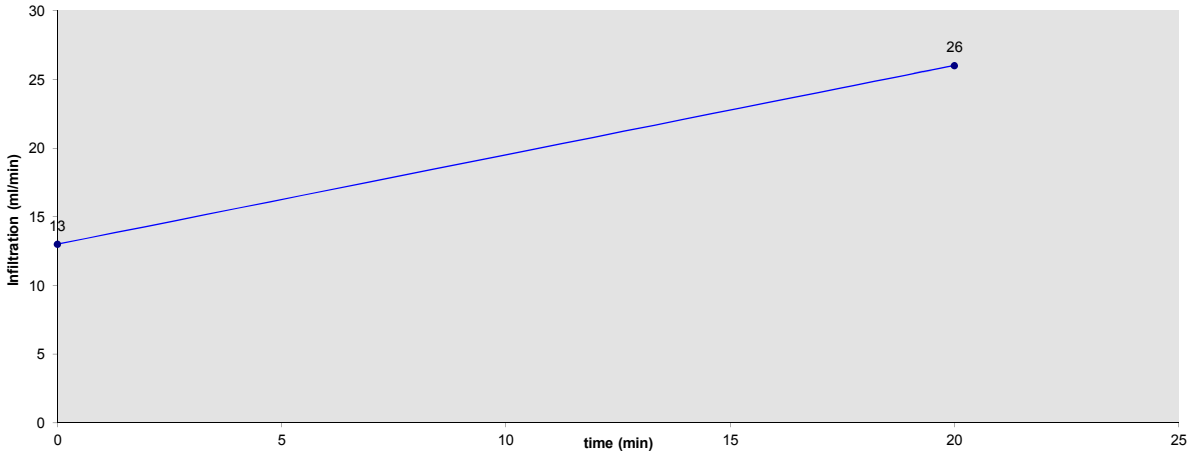
Location **Excavation pit 6 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	572	0	0
2	623	20	26
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.43	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **4.4 * 10 -5 m/s** = **381.0 cm/day**

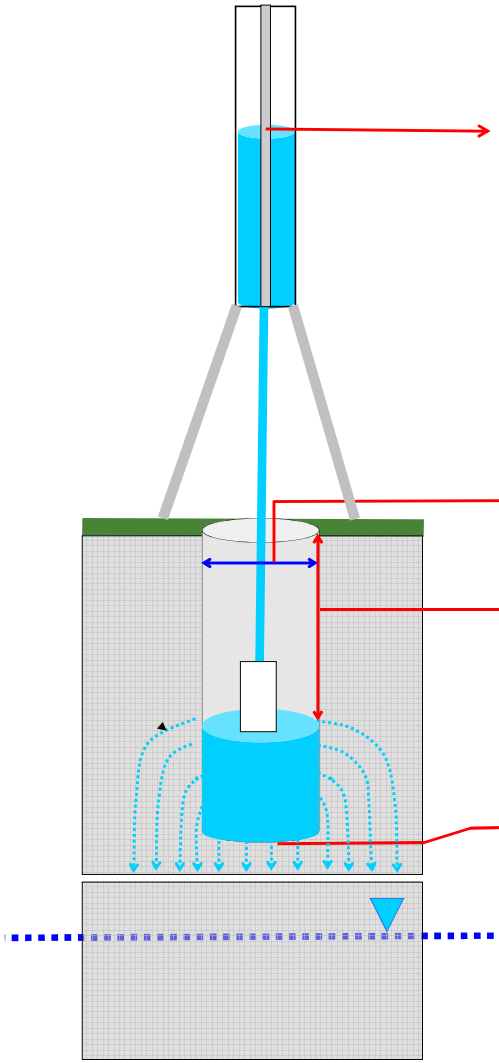
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

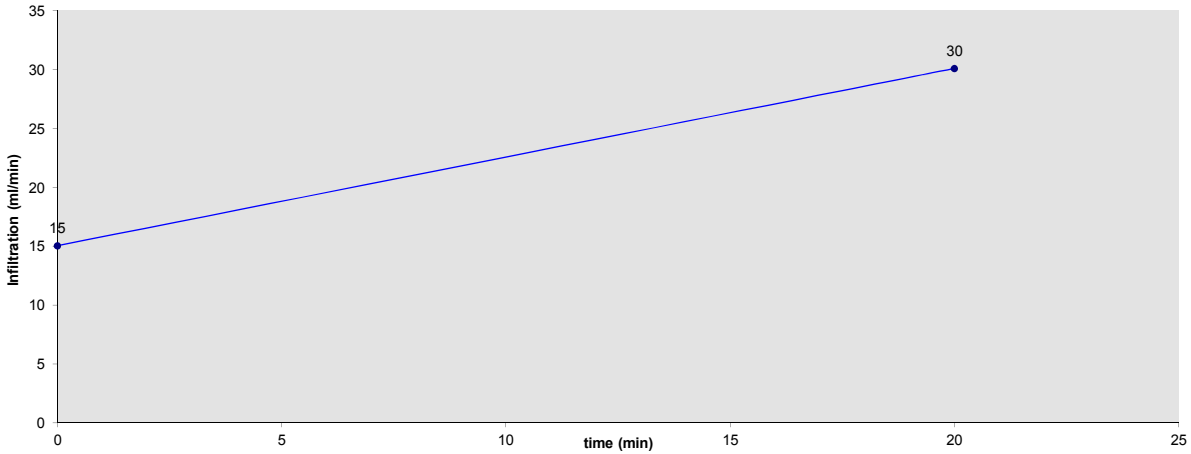
Location **Excavation pit 9 - Adjacent undistrubed ground - 20/01/2012**



field data

	mm	min	Q/min
1	675	0	0
2	734	20	30
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.50	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **5.1 * 10^{-5} m/s** = **440.8 cm/day**

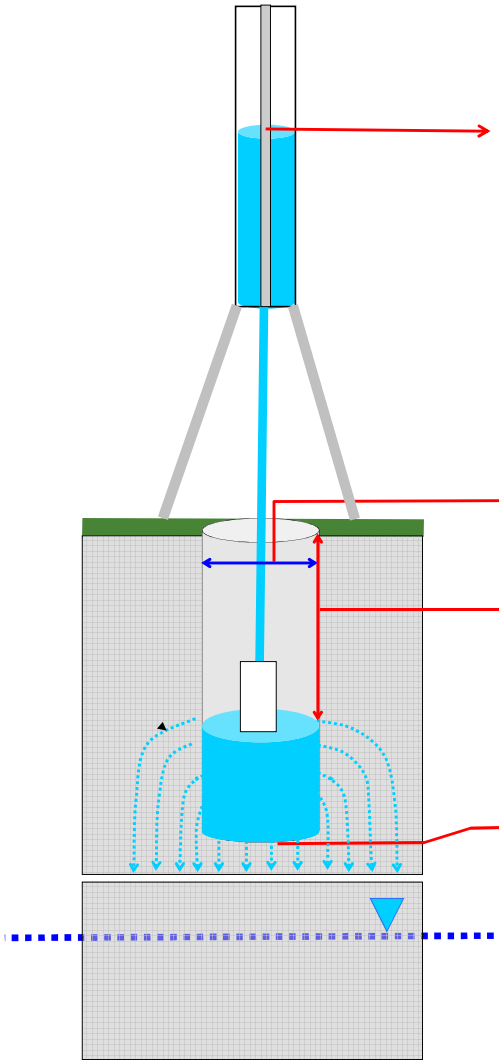
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

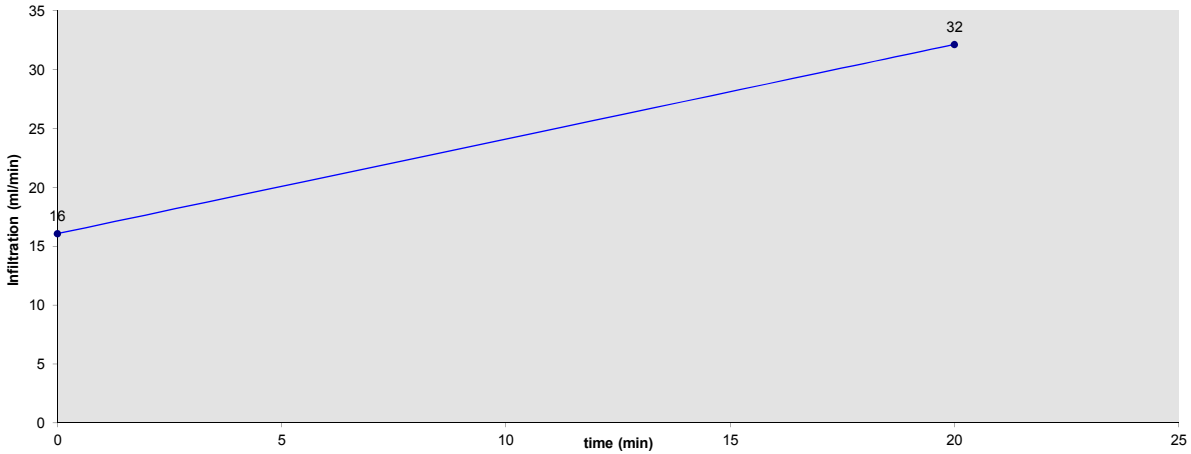
Location **Excavation pit 9 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	578	0	0
2	641	20	32
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.54	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **5.4 * 10 -5 m/s** = **470.7 cm/day**

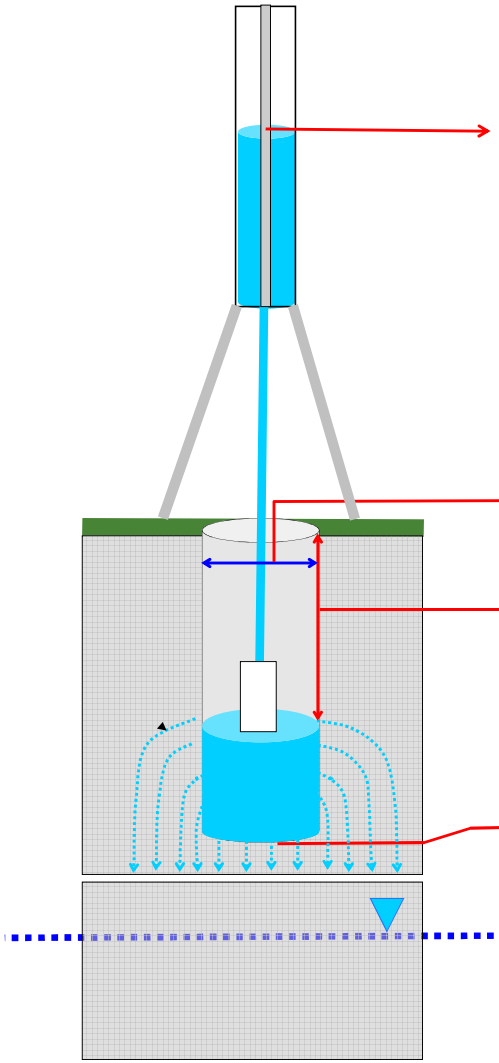
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

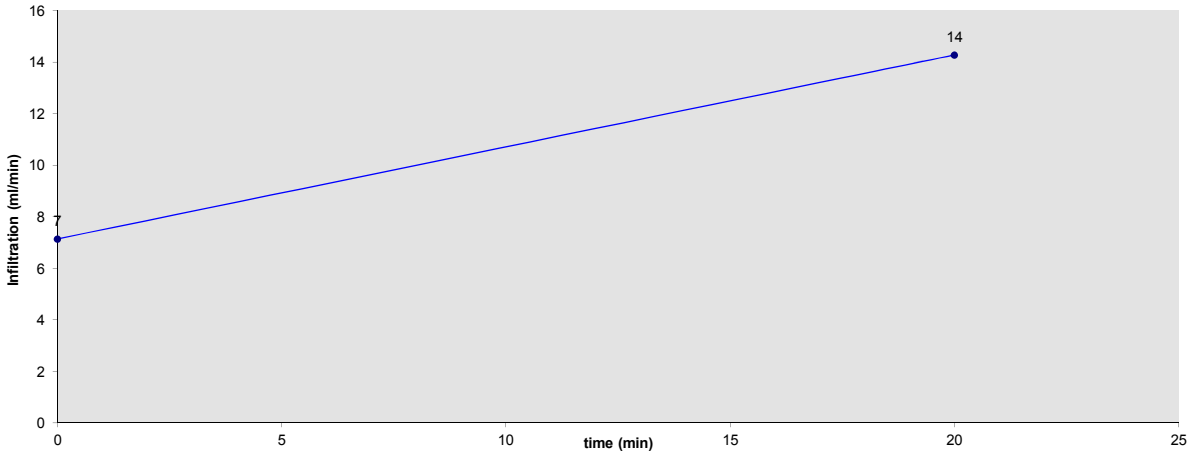
Location **Excavation pit 11 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	620	0	0
2	648	20	14
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.24	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **2.4 * 10 -5 m/s** = **209.2 cm/day**

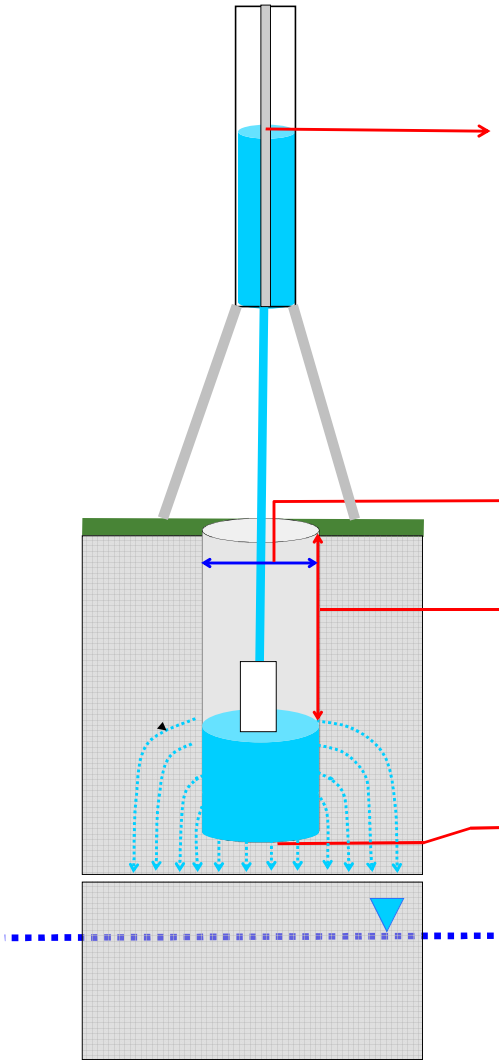
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

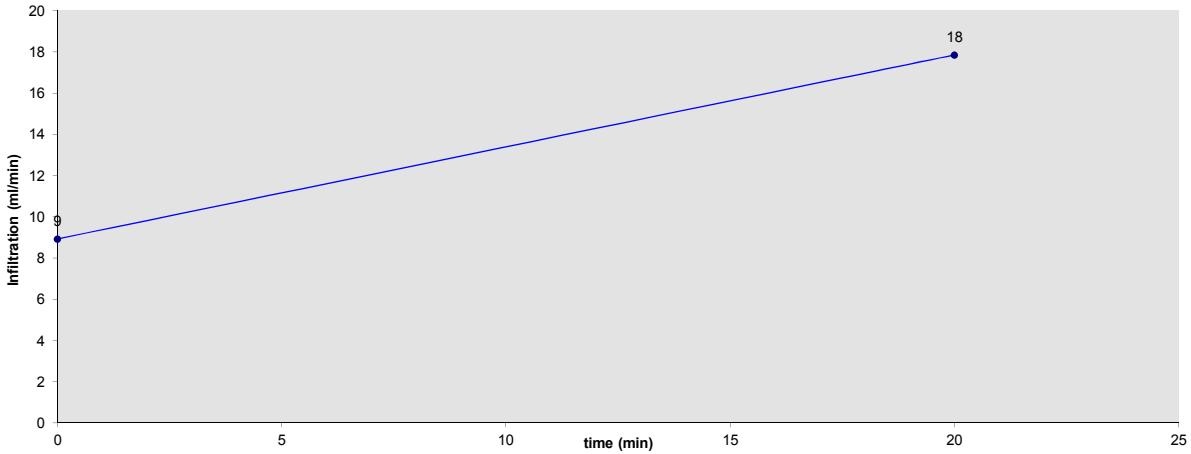
Location **Excavation pit 11 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	658	0	0
2	693	20	18
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.30	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: 3.0 * 10 -5 m/s

261.5 cm/day

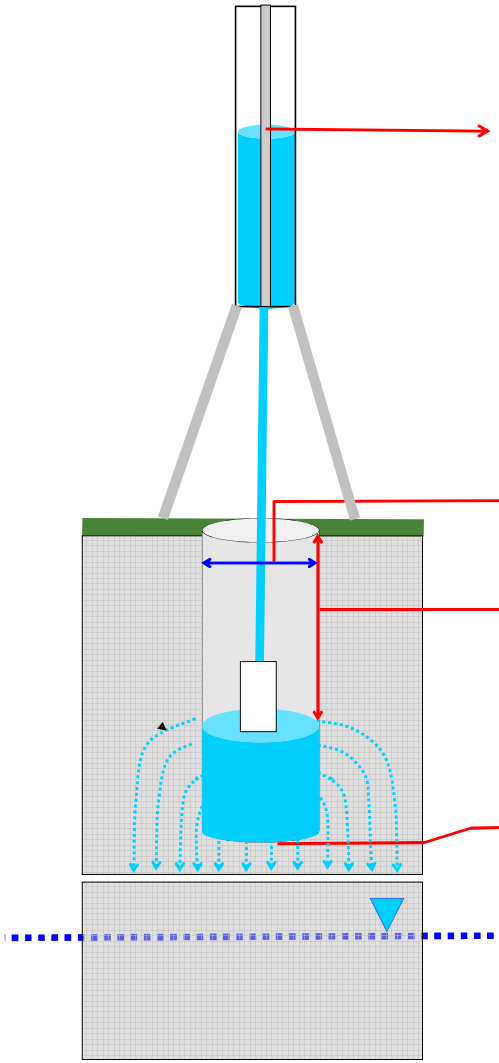
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

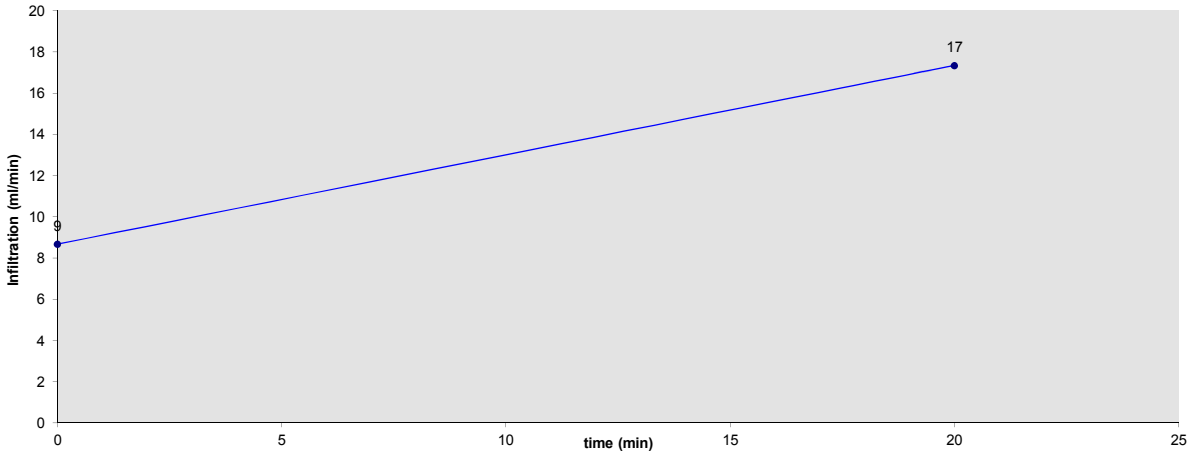
Location **Excavation pit 15 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	569	0	0
2	603	20	17
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.29	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **2.9 * 10 -5 m/s** = **254.0 cm/day**

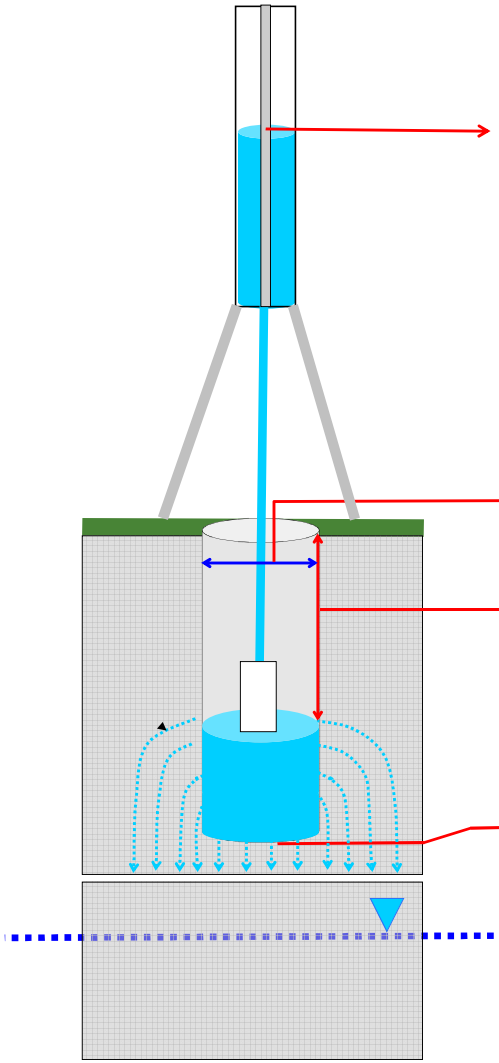
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

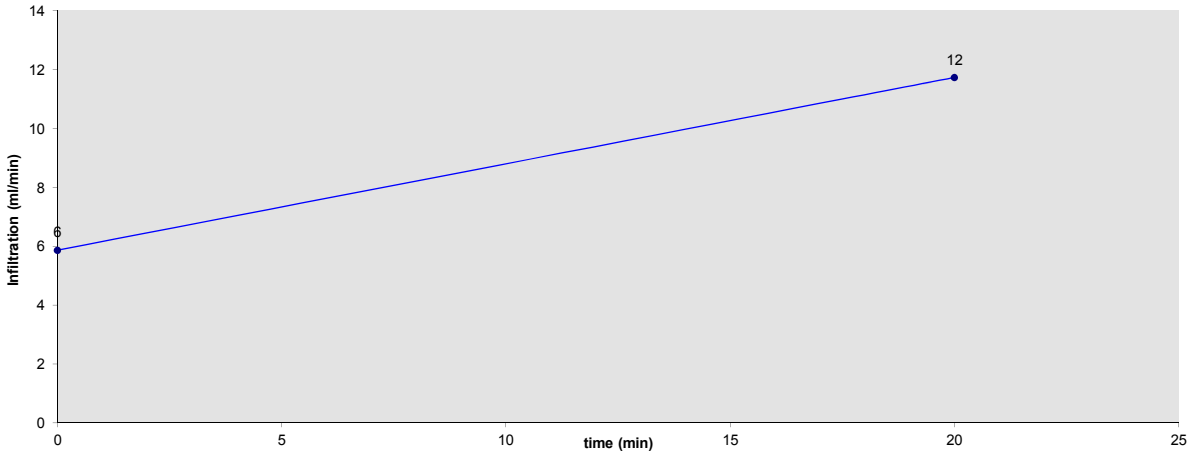
Location **Excavation pit 15 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	544	0	0
2	567	20	12
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.20	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **2.0 * 10^{-5} m/s** = **171.8 cm/day**

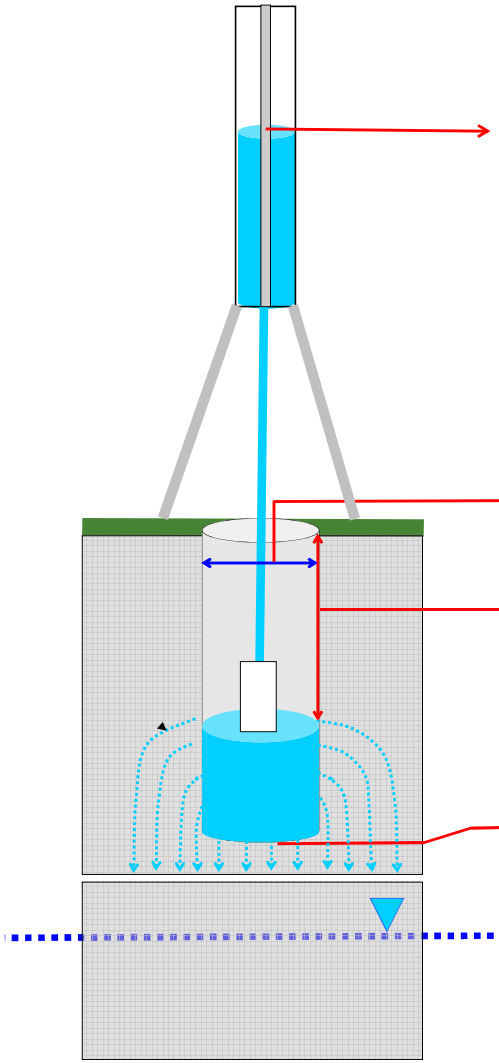
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

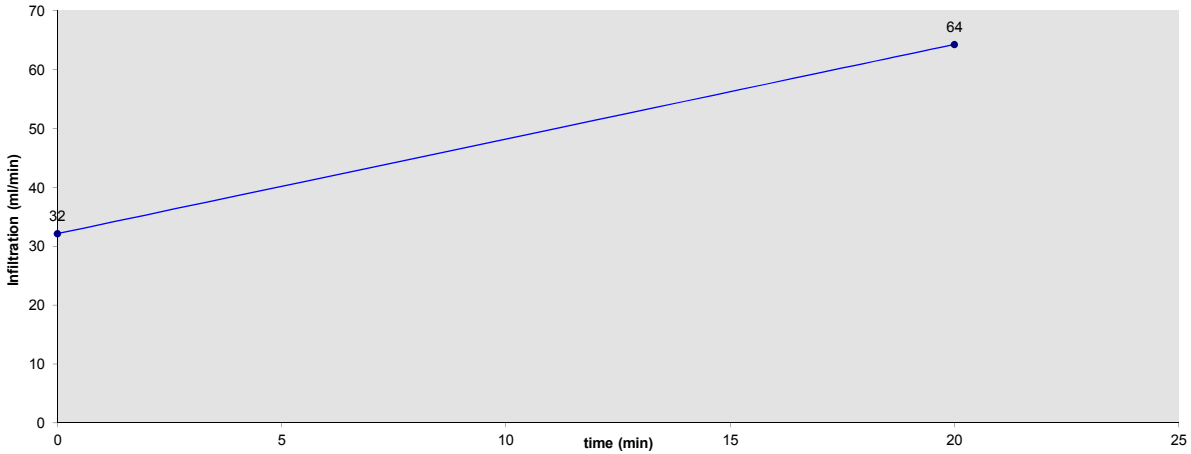
Location **Excavation pit 18 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	708	0	0
2	834	20	64
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	1.07	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **1.1 * 10^{-4} m/s** = **941.4 cm/day**

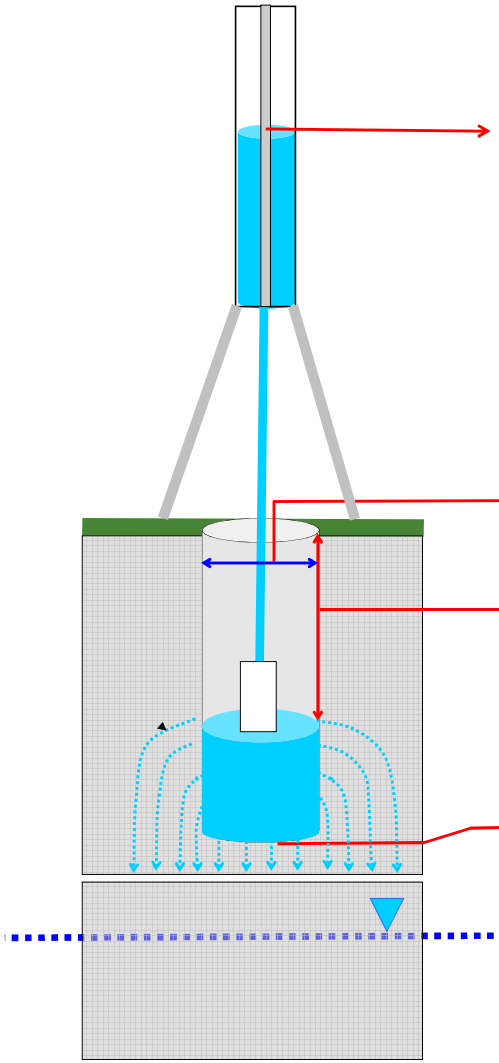
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

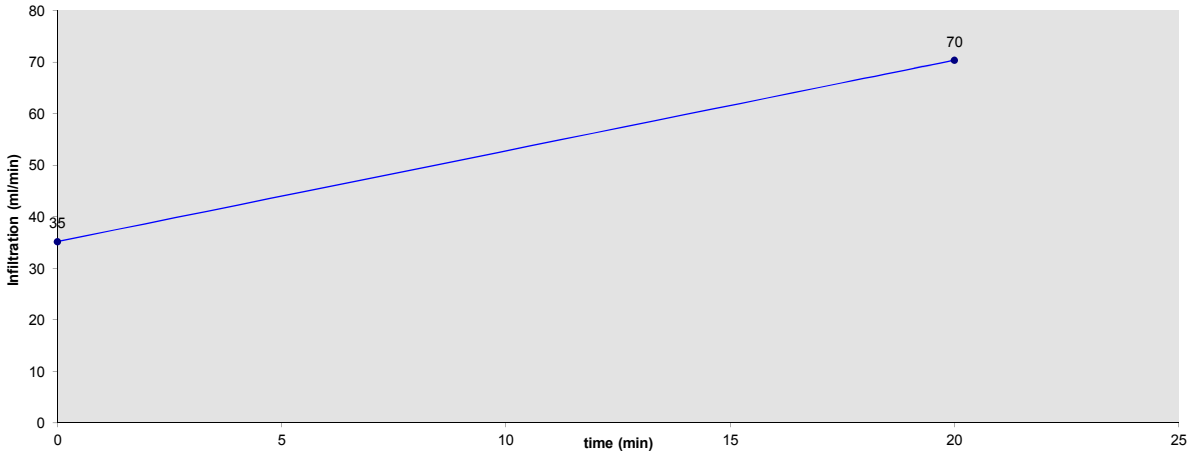
Location **Excavation pit 18 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	564	0	0
2	702	20	70
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	1.17	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **1.2 * 10 -4 m/s**

cm/day

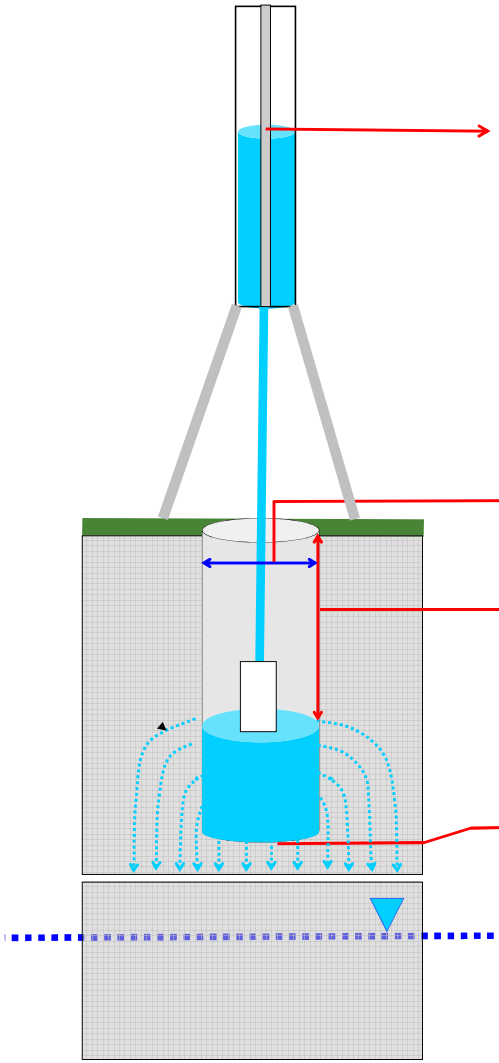
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

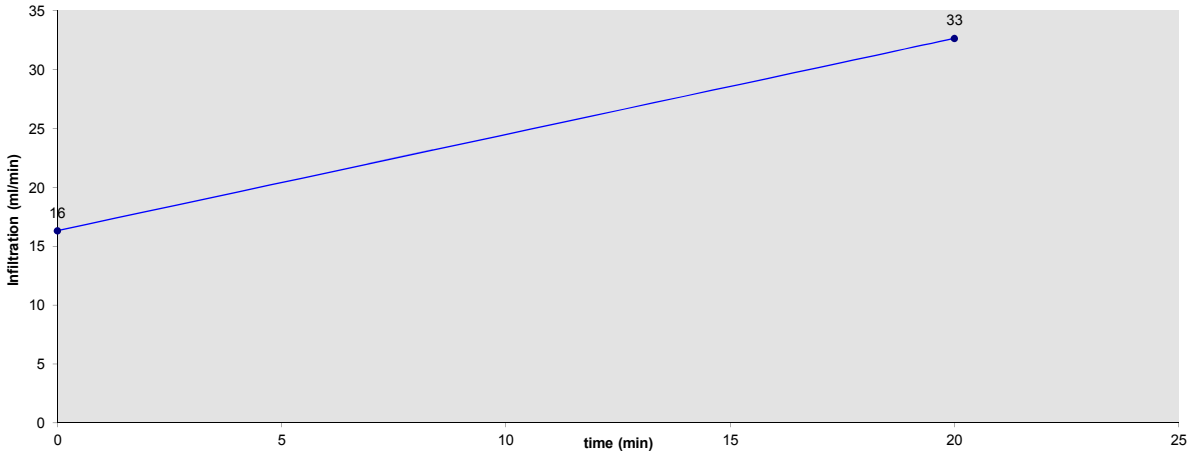
Location **Excavation pit 25 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	721	0	0
2	785	20	33
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.54	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **5.5 * 10 -5 m/s** = **478.2 cm/day**

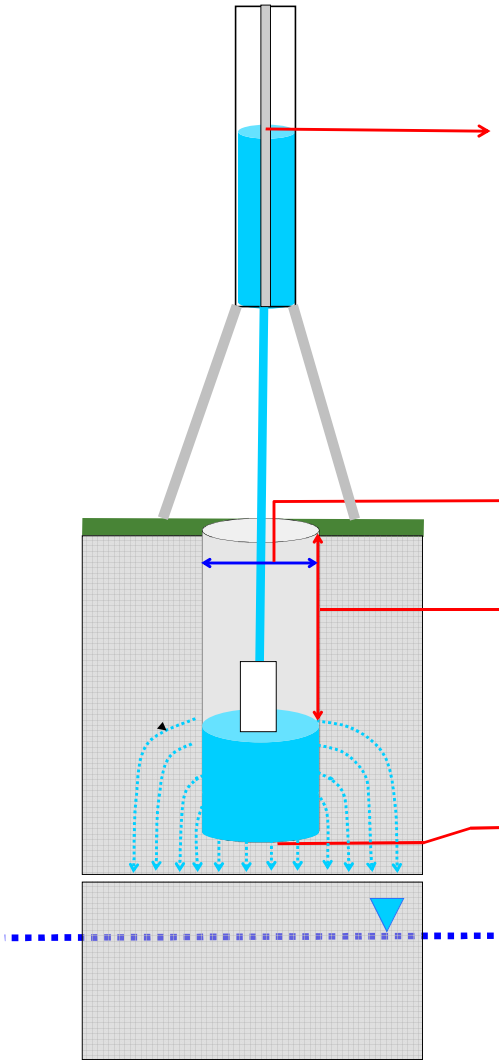
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

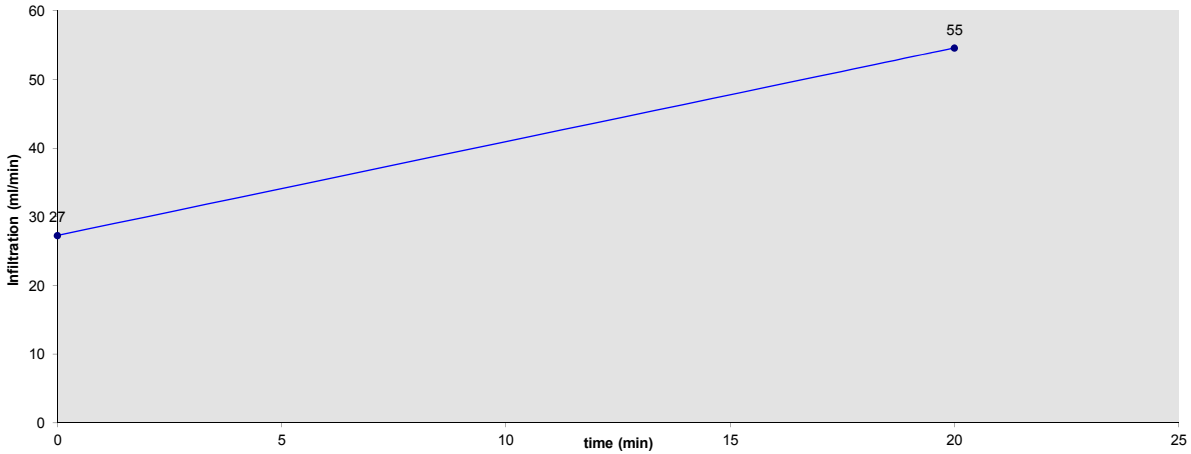
Location **Excavation pit 25 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	754	0	0
2	861	20	55
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.91	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **9.3 * 10 -5 m/s** = **799.4 cm/day**

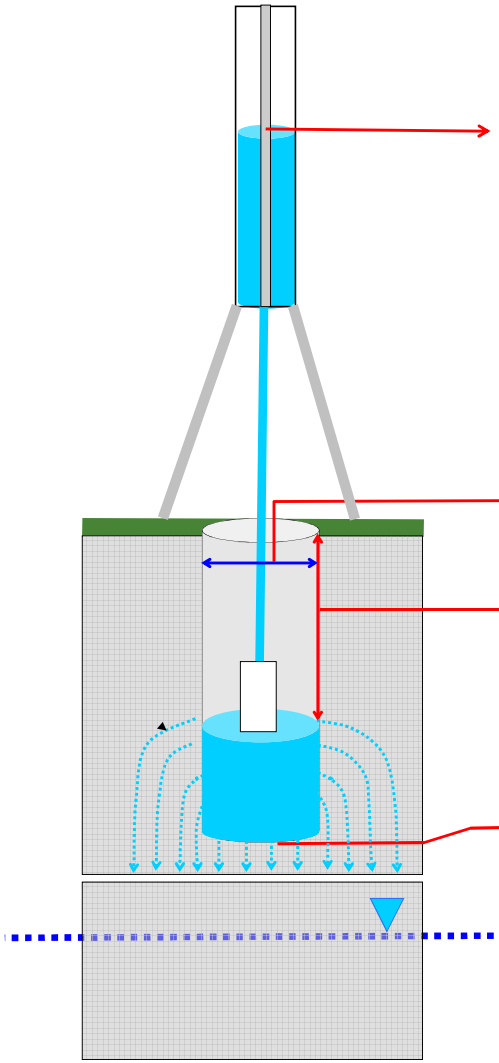
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

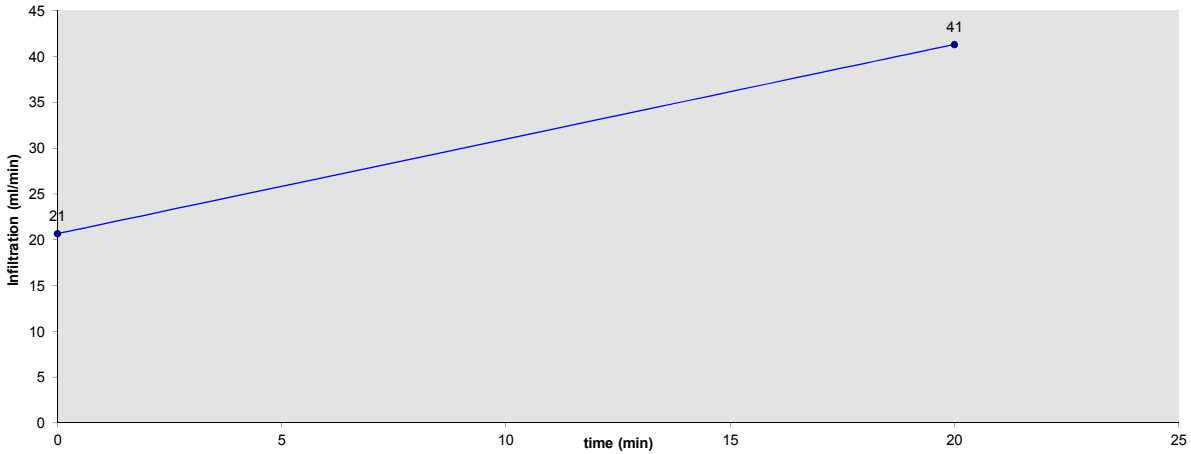
Location **Excavation pit 30 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	751	0	0
2	832	20	41
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.69	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **7.0 * 10 -5 m/s** = **605.2 cm/day**

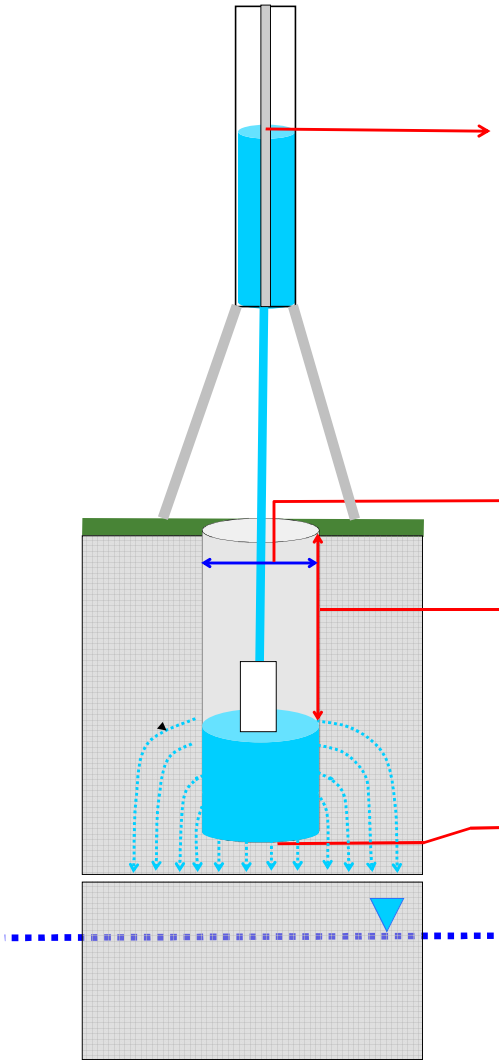
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

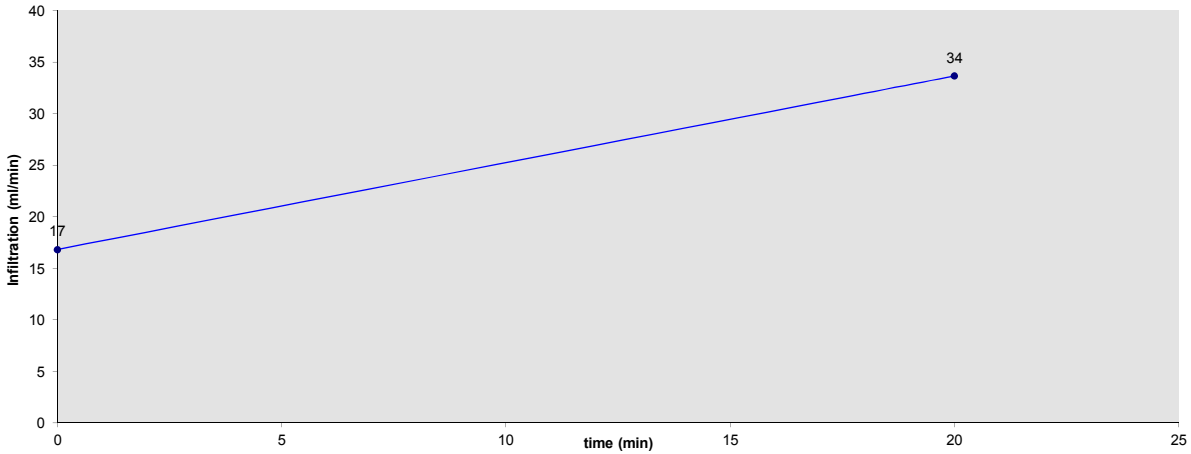
Location **Excavation pit 30 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	678	0	0
2	744	20	34
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.56	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **5.7 * 10 -5 m/s** = **493.1 cm/day**

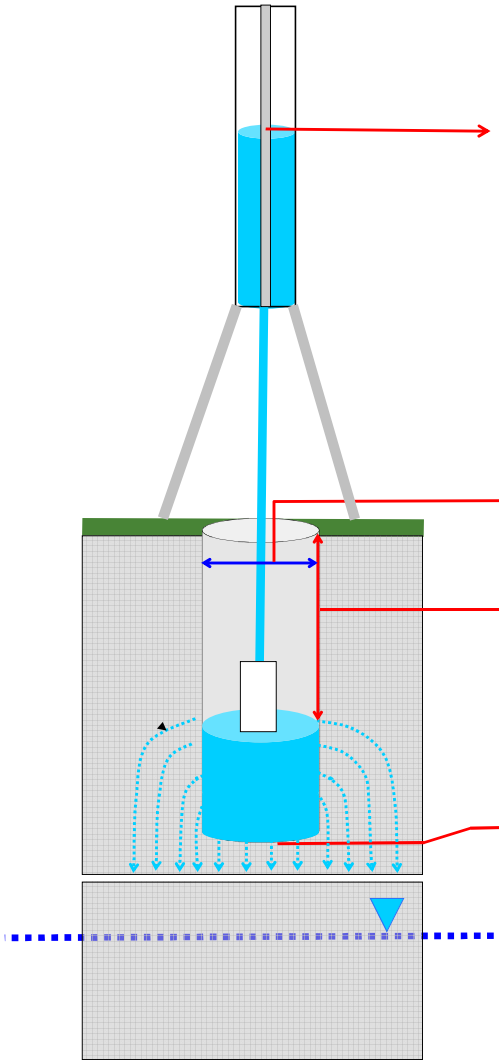
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

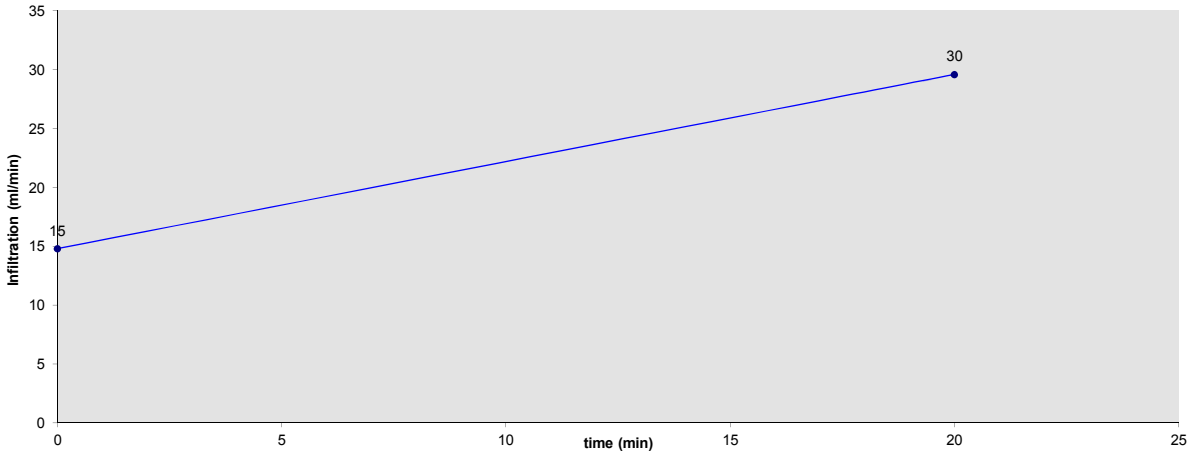
Location **Excavation pit 18 - Adjacent undisturbed ground - 20/01/2012**



field data

	mm	min	Q/min
1	570	0	0
2	628	20	30
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.49	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q V * \frac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q V * \frac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **5.0 * 10 -5 m/s** = **433.3 cm/day**

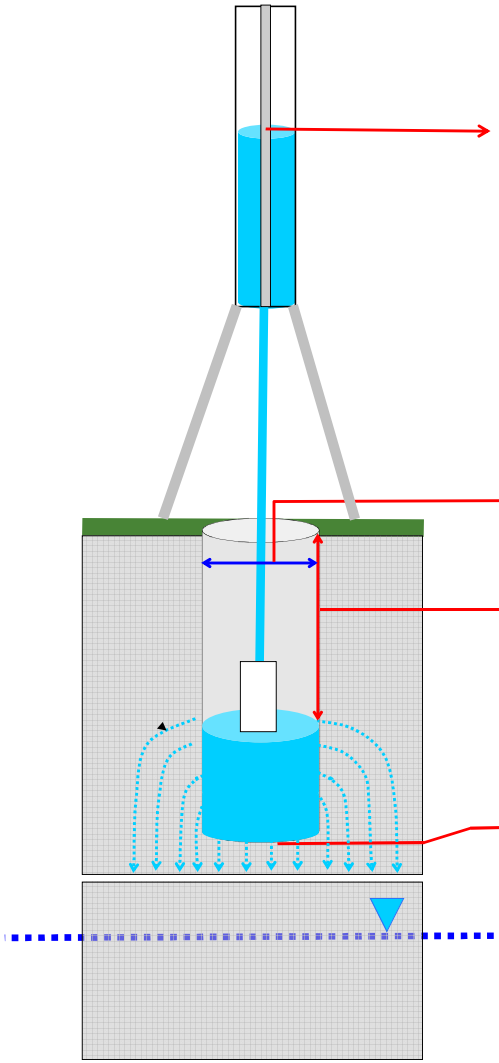
Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986

WELL PERMEAMETER METHOD

Site **UHCMS external pathway analysis**

Date

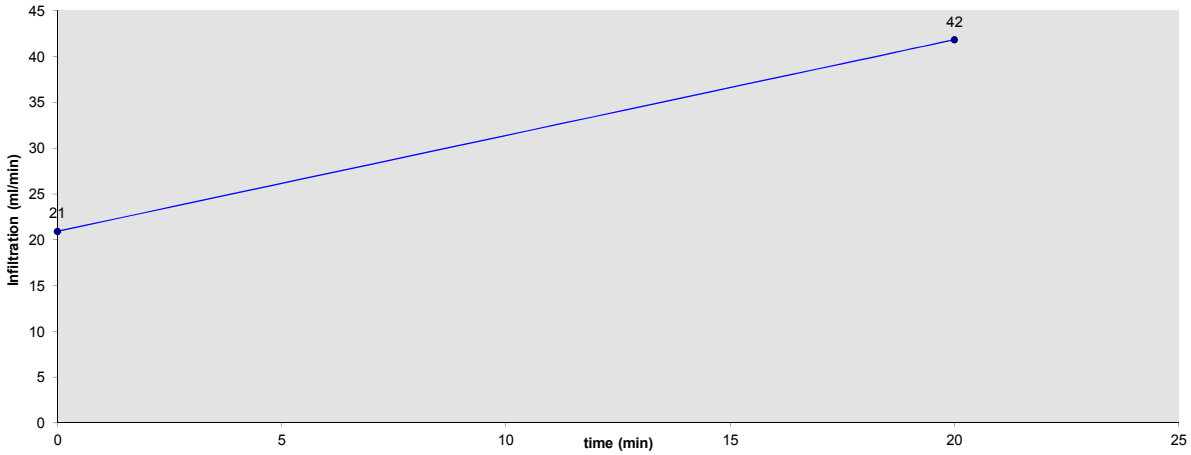
Location **Excavation pit 31 - In pipe trench - 20/01/2012**



field data

	mm	min	Q/min
1	631	0	0
2	713	20	42
3			---
4			---
5			---
6			---
7			---
8			---
9			---
10			---
11			---
12			---

calculations



3	cm	diameter of auger hole
2	cm	distance water in auger hole and ground surface (h_o)
10	°C	temperature of water
5	cm	depth auger hole (H)
999	cm	water table or impervious layer (GW)

interim results

rate of infiltration "Q"	0.70	ml/sec
effective radius of well "r"	2	cm
value "ho"	2	cm
value "h" = H-ho	3	cm
value "S" = GW-H	994	cm
value "V"	1.3	viscositiy at 20°C

if S ≥ 2h than $k = Q\,V * \dfrac{\ln\left[\frac{h}{r} + \sqrt{\left(\frac{h}{r}\right)^2 + 1}\right] - 1}{2\pi * h^2}$ [m/s]

if S < 2h than $k = Q\,V * \dfrac{3 * \left(\ln \frac{h}{r}\right)}{\pi * h * (3h + 2S)}$ [m/s]

k_{20}: **7.1 * 10 -5 m/s** = **612.7 cm/day**

Klute, A.: Methods of soil analysis, Part 1, Physical and mineralogical methods. American Society of Agronomy, Madison, Wisconsin. 1986