Deloitte & Touche

Anvil Range Mining Complex Monitor Mine Waste Rock Trial Covers: 2005 Data Summary

2005/06 - Task 20a

Prepared for

Deloitte and Touche Inc.

on behalf of

Faro Mine Closure Planning Office

Prepared by

SRK Consulting
Engineers and Scientists

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Anvil Range Mining Complex

Monitor Mine Waste Rock Trial Covers: 2005 Data Summary

2005/06 Task 20a

Deloitte & Touch Inc.

On behalf of

Faro Mine Closure Planning Office

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Executive Summary

Objectives and Primary Findings:

This report summarizes the data collected from the waste rock trial covers at the Anvil Range Mining Complex during the 2005 monitoring season (June to October). The intent of this report is to document the field results and provide feedback on the quality of data collection. Where data collection problems are identified, this report provides recommendations to remedy the problems as well as mitigation measures that can be implemented to prevent similar problems from occurring again. This report does not contain a technical analysis of the data, but simply confirms that the instrumentation systems are working as expected, and that the data collected follows reasonable trends.

Detailed data interpretation would be premature at this time since this is the first season of data collected after construction, since the results have probably been influenced by construction, and since the period of data collection does not cover an entire season.

Detailed information regarding operation, calibration, suitability and accuracy of the monitoring instrumentation used to collect the data presented in this report is provided in the as-built report (SRK 2006), and therefore is not repeated here.

Future Work Recommendations:

The report provides a series of recommendations to improve data collection during subsequent monitoring years. These range from improved monitoring protocols to the provision of increased backup systems in case of problems.

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1 Introduction and Scope of Report

1.1 General

Deloitte & Touche Inc. (D&T) was appointed Interim Receiver of the property, assets and undertaking of Anvil Range Mining Corporation (ARMC), and its subsidiaries, Anvil Range Properties Inc., (collectively "Anvil") pursuant to an Order of Mr. Justice Blair of the Ontario Court (General Division) dated April 12, 1998. SRK Consulting (Canada) Inc. (SRK) was retained by D&T, on behalf of the Faro Mine Closure Planning Office (FMCPO) to assist in the development of a Final Closure and Reclamation Plan (the "Plan") for the Anvil Range Mining Complex. Based on current expectations, this Plan will be submitted to the relevant regulating authorities by late 2006. Engineering studies are being undertaken in the interim to the provide necessary scientific background information required to characterize and estimate costs for various closure methods that may be used in the Plan.

This report summarizes data collected during between June and October 2005 under 2005/06 Task 20a, "Monitoring of Waste Rock Pile Trial Covers at Vangorda", as stipulated in an SRK proposal dated May 17, 2005. The 2005/06 Task 20a follows 2004/05 Task 14a, "Waste Rock Dump Cover Trials". No report was issued for 2004/05 Task 14a because construction of the cover trials was only completed in September 2004, and there was no data to report. An "as-built" report for the trial covers has been prepared as a separate report under 2004/05 Task 14a (SRK 2006).

1.2 Background of the Project

The ARMC has about 185 million cubic meters of waste rock covering about 542 ha of surface area. Detailed geochemical characterization has confirmed that much of this waste rock is acid generating and contains leachable metals. As part of the Plan currently being developed for the ARMC, various mitigation methods for these waste rock piles are being considered. One of these methods includes physical covering of the waste rock piles.

The specific functions that a cover would have to perform have not been defined. However, the most likely functions would include;

- preventing direct exposure and contact with the waste rock,
- reducing, and possibly minimizing infiltration through the waste rock, and
- providing a medium that would allow re-vegetation of the piles.

Other potential functions have not been excluded, but there appears to be consensus within the Working Group responsible for the description and evaluation of the cover methods, that constructing covers to act as oxygen barriers would not be beneficial. Significant oxidation of the waste rock has already occurred, effectively negating benefits offered by oxygen exclusion.

One of the single most challenging aspects of cover design for the site entails designing an infiltration reducing cover that will continue to perform effectively in the very long term, using the locally available till and glacio-fluvial soils. It is standard practice to make use of numerical models to assess the potential performance ranges of different cover configurations. However, the only reliable method to evaluate the physical aspects that determine long-term cover performance is to monitor site specific trial covers.

Subsequently, six trial covers (CT#1, CT#2A, CT#2B, CT#3A, CT#3B and CT #4) were constructed on the Vangorda waste rock pile in September 2004, as illustrated in Figures 1, 2 and 3. These trial covers have been designed to test a range of different physical performance criteria for the available materials, specifically focused towards evaluating performance as "infiltration reducing" covers. Detailed water balance instrumentation was installed in the trial covers in June 2005 (see Figures 4 through 8).

It is anticipated that these trial covers will be monitored for up to about five years, and that the information gleaned from these covers will be used to optimize final cover designs for the ARMC. Useful data is likely to only be available at the conclusion of the 2006 monitoring season, since the 2005 season data, presented in this report, is incomplete and is probably affected by construction activities.

1.3 Scope of Work

This report summarizes the data collected from the trial covers during the 2005 monitoring season (June to October). The intent of this report is to document the basic field results and provide feedback on the quality of data collection. Where data collection problems are identified, this report provides recommendations to remedy the problems as well as mitigation measures that can be implemented to prevent similar problems from occurring again. This report does not contain a technical analysis of the data. Because this is the first season of data collected after construction, and the results have probably been influenced by construction, the period of data collection does not cover an entire season.

Detailed information regarding the monitoring instrumentation used to collect the data presented in this report, covering their operation, calibration, suitability and accuracy is provided in the as-built report (SRK 2006), and therefore is not repeated here.

1.4 Methods

The six trial covers (Figures 2 and 3) were constructed in September 2004, in accordance with SRK design requirements. Construction was carried out by a local contractor, Tim Moon Construction, supported by ARMC staff and equipment. Construction supervision was carried out by two SRK engineers, Maritz Rykaart, P.Eng. and Peter Mikes, E.I.T. The instrumentation was installed in June 2005 by Mr. Rykaart. The instrumentation was commissioned in June 2005. Complete construction and instrumentation details are provided in an as-built report (SRK 2006).

ARMC staff, including two UBC summer students, were trained by SRK to carry out the field monitoring for the 2005 monitoring season (June to October). A written monitoring protocol was provided to ARMC, and is included as Appendix A. Data was downloaded directly from the different data loggers onto a laptop computer. In addition, a series of readings were collected manually and converted into electronic format. All field data collected by ARMC was sent to SRK via e-mail.

SRK used the proprietary software linked to each of the data loggers to open and view the data to ensure that the loggers were operating satisfactorily. At the end of the monitoring season, SRK developed a master database to collate all the field instrumentation data in a central location. This master database converts raw field data into its final useable format by correctly applying material specific calibration information. The figures illustrating the field data presented in this report (Figures 11 through 96) were created using this master database. Complete details of how data is prepared for input into the database and how the database was developed are included in the as-built report (SRK 2006).

In addition to the instrumentation data, SRK carried out a field program to collect in-situ geotechnical data. Most of this data was collected by an SRK engineer, Karin Wagner, during the period August 2-9, 2005. Ms. Wagner was assisted by ARMC staff. The in-situ characterization consisted of ring infiltrometer and Guelph permeameter testing, as well as in-situ soil density testing. The density testing was carried out by EBA Engineering Ltd. This information will be used to determine how the cover trial soils' physical properties change over time.

In addition to the data presented in this report, weather data are collected from two on-site weather stations, and annual snow surveys are conducted by staff from the Yukon Territorial Government (Janowicz *et al*. 2005, 2006). This data is not presented here, but will be used to compare the validity of the cover trial data when detailed data analysis is carried out following future years of monitoring.

1.5 Report Structure

Section 2 contains information associated with the series of automated data loggers collecting field monitoring data for the trial covers. The remainder of the instrumentation data is collected manually, the details of which are presented in Section 3. Details of the in-situ geotechnical testing are listed in Section 4. The final section of the report provides a summary of the action items arising from this data summary report.

2 Automated Instrumentation Data Logger Data

2.1 Davis Instruments Vantage Pro (Weather Stations and Satellite Stations)

Complete climatic data is collected at the Vangorda Waste Rock Pile trial cover location using two Davis Instruments Vantage Pro Weather stations. The first station is located on the sloped CT#1 trial cover and the second on the dividing berm between horizontal trial covers CT#2A and CT#2B. Figure 2 schematically illustrates these locations. Additional climatic data (air temperature and relative humidity), as well as shallow soil moisture and temperature data, are collected via two satellite Davis Instruments stations located approximately 25 m from these two primary weather stations, as illustrated in Figure 4. Figures 6 and 7 illustrate the locations of the soil moisture and temperature sensors installed as part of the satellite stations.

At each setup, the data from the weather station and the satellite station is collected by a Vantage Pro data logger housed in the weather enclosure situated beneath the weather station. The data loggers collect and store primary climatic data, as listed in Table 1. This data is measured directly from the suite of climatic sensors. This data is also presented as time-series graphs in Figures 11 through 22. Review of the data confirms that all the instruments and the data loggers performed well during the 2005 monitoring season. The data is realistic and no data loss occurred.

In addition to the sensor data listed in Table 1, the data logger uses this primary data to calculate a series of secondary climatic information. Since, this report focuses on the integrity of the primary collected data, this reduced data was not reported. SRK did, however, review all this data to confirm that the data logger was operating satisfactorily, and that the data collected made sense. This data has also been imported into the central database for future use. Appendix B provides a brief summary of this data.

No maintenance was carried out on the weather or satellite stations. However, regular visual inspections by the monitoring staff concluded that there were no problems. It was observed that later in the season, the data loggers displayed warning signs of “low battery”. This was unexpected as the batteries, which are recharged by a solar panel, should normally be able to operate the data logger for at least one year. The battery voltages were checked and they were found to contain sufficient capacity to last the 2005 monitoring season (through to the end of October 2005). It was concluded that the original batteries were close to their shelf-life when they were installed. New batteries were ordered and will be installed when the stations are re-commissioned in 2006. As, a precautionary measure, a spare set of batteries will be provided on site in 2006.

Table 1: Summary of Primary Data Collected by Davis Instruments Vantage Pro Weather and Satellite Stations

Parameter	Location	Sample Frequency	Units	Figure	Comment
Rainfall	Both weather stations	Every 50-60 sec; output as hourly total	mm	Figure 11	Reported as "mean hourly", but is in fact an hourly total; Rain rate (mm/hr) is also recorded (not presented)
Ambient Outside Air Temperature	Both weather and satellite stations	Every 10-12 sec; output as mean hourly	^{o}C	Figure 12	Max/Min hourly also recorded at weather stations (not presented)
Relative Humidity	Both weather and satellite stations	Every 50-60 sec; output as mean hourly	%	Figure 13	Range of 0% to 100%
Solar Radiation	Both weather stations	Every 50-60 sec; output as mean hourly	W/m^2	Figure 14	"Hi solar radiation", i.e. peak hourly solar radiation also recorded (not presented)
Barometric Pressure	Both weather stations	Every 50-60 sec; output as mean hourly	mm Hg	Figure 15	
Wind Speed	Both weather stations	Every 2.5-3 sec; output as mean hourly	km/hr	Figure 16	Max/Min hourly also recorded at weather stations (not presented)
Wind Direction	Both weather stations	Every 2.5-3 sec; output as mean hourly	N/E/S/W	Figure 17	Max hourly also recorded at weather stations (not presented)
Ultraviolet (UV) Index	Both weather stations	Every 50-60 sec; output as mean hourly	Scale 1 – 16	Figure 18	"Hi UV Index", i.e. maximum hourly UV Index also recorded (not presented)
Soil Moisture[1]	Both satellite stations	Every 50-60 sec; output as mean hourly	Cb	Figure 19 (CT#1); Figure 21 (CT#2A)	Measured at two depths
Soil Temperature	Both satellite stations	Every 50-60 sec; output as mean hourly	^{o}C	Figure 20 (CT#1); Figure 22 (CT#2A)	Measured at two depths

1. Soil Moisture is measured in units of centibar (Cb) according to the supplier, which is not a true unit of soil moisture. The true parameter measured by this instrument is, in actual fact, soil matric suction.

2.2 Campbell Scientific CR10X

2.2.1 General Setup

Two Campbell Scientific CR10X data loggers collect soil matric suction and temperature data from Campbell Scientific CS229 matric suction sensors, as well as soil volumetric moisture content from Sentek Sensor Technologies EnviroSCAN sensors. These data loggers are located adjacent to each other in the monitoring hut, as illustrated in Figures 4 and 5.

The first data logger (CR10X #1) collects the soil matric suction, temperature and volumetric moisture content data from CT#2A and 2B. The second data logger (CR10X #2) records the same suite of data from CT#1, CT#3A, CT#3B, and CT#4. In addition, the CR10X #2 data logger records data from three tipping buckets used to measure the interflow from CT#3A, CT#3B and CT#4. Details of the instrument locations are presented in Figures 4 through 8.

Data collected by the CR10X data loggers are stored in a series of "Arrays" (i.e. a summary table of data). The soil matric suction, temperature and volumetric moisture content are recorded every six hours (midnight, 6AM, noon, and 6PM), whilst the interflow is recorded instantaneously (i.e. whenever there is flow data is recorded, irrespective of the time interval). Daily summary output of all the data is provided, which also includes information about the battery voltage for diagnostic purposes.

2.2.2 Battery Voltage

The data loggers and instruments are powered by a 12V battery (one per data logger). These batteries are continuously recharged using solar energy (one solar panel per battery). The data logger has an internal protection circuit that will shut the logger down if the battery voltage drops below 10.5V, or exceeds 15V. For this reason, the data loggers have been programmed to record the battery voltage as part of the daily summary array. This information, for data logger CR10X #1, is shown in Figure 23 and confirms that the system performed as expected. The second data logger CR10X#2 did however shut down between August 23, 2005 and September 27, 2005, as a result of a low battery voltage.

As per the protocol, the monthly data downloads were reviewed to ensure there were no instrumentation errors. However, since the soil matric suction, temperature and soil moisture data were being recorded correctly, no notice was given to the fact that the daily summary array was not being recorded by the CR10X#2 data logger, and therefore the battery voltage was not being monitored. During the September 6, 2005 data download, the field staff realized that there was a communication problem with the CR10X#2 data logger, and action was initiated by SRK to find the fault. The problem turned out to be a faulty solar panel, which was subsequently replaced by the supplier. With no ability to recharge, the battery had slowly run down, and subsequently dropped below the threshold value of 10.5V, shutting down this data logger.

As a mitigation measure the written monitoring protocol will be expanded to require a physical diagnostic check on the battery and solar panel every time that the data is downloaded.

2.2.3 Soil Matric Suction

Soil matric suction is measured in each trial cover using a series of Campbell Scientific CS229 thermal conductivity sensors. There are three to six sensors in each trial cover, as illustrated in Figures 6 to 9. Soil matric suction is recorded as a voltage differential by the data logger. This voltage differential, through the application of material specific calibration curves, is converted to matric suction, expressed in kPa. This conversion is done by SRK during the process of transferring the data logger data to a central database. Figures 24 through 29 illustrate the converted soil matric suction values recorded during the 2005 season.

All the sensors have performed as expected. The measurement values are within the expected range and the trends observed appear realistic. The gaps in the data for CT#1, CT#3A, CT#3B, and CT#4 are the result of the data logger shutting down due to low battery voltage, and do not reflect failure of the sensors.

2.2.4 Soil Temperature

The soil temperature is measured using the same CS229 thermal conductivity sensors, recording the soil matric suction. This occurs because the first step in recording the soil matric suction entails taking an in-situ soil temperature reading. Just as with the matric suction data, the raw data is recorded as a voltage and, through application of the material specific calibration curves in the post-processing phase, the soil temperature profiles illustrated in Figures 30 to 35 are produced.

The data gap between August 23, 2005 and September 27, 2005, is as a result of the battery problems with data logger CR10X #2. All sensors performed according to expectations.

2.2.5 Soil Volumetric Moisture Content

A profile of soil volumetric moisture content is measured in each trial cover using Sentek Senor Technologies EnviroSCAN probes. Each profile contains between seven and thirteen individual beads, as illustrated in Figures 6 to 9. The data recorded by the sensors is relative volumetric moisture content, expressed as a fraction, using a standard calibration curve. During the post-possessing, SRK corrects these values to actual volumetric moisture contents by applying material specific calibration curves. This data is presented in Figures 36 through 41, and confirms that all sensors performed as expected. The data gap, associated with the shutting down of CR10X #2 did not affect the sensor performance.

2.2.6 Interflow Totals (Tipping Buckets)

Interflow is measured on CT#3A, CT#3B and CT#4. This interflow is measured using two methods. The first is a Seametrics flowmeter (see Section 2.4), and the second is a 0.2 mm tipping bucket, as illustrated in Figures 5, 6 and 8. Instantaneous flow data from these tipping buckets is recorded by the CR10X #2 data logger in the form of a number of counts. As part of the post-processing, these counts are summed for every 24-hour period, and the total volume is calculated by multiplying the count number with the tip capacity. This daily data is presented in Figures 42 through 44. The tipping buckets have performed as expected, and the scarcity of data simply denotes a lack of interflow.

2.3 Lakewood Systems UL16 Data Logger (Soil Temperature)

Two thermistor strings, each with eight M-Squared thermistor beads, have been installed in the Grum Overburden Dump, as illustrated in Figure 9. These two thermistor strings (String A and String B) are monitored by a Lakewood UL16 data logger which records a relative voltage every twelve hours. These raw voltage profiles are presented in Figures 45 and 46, and confirm that the strings are performing as expected.

Post-processing of the raw voltage data to actual soil temperature data could not be carried out, since the data was not downloaded from the data logger using the correct format. This is however not a problem, since the data logger has sufficient memory to store many years of data, and as soon as the 2006 monitoring season is initiated, the 2005 data will be recaptured using the appropriate format. This problem simply reflects a communication error between SRK and the field staff, but does not compromise the data. To prevent this from happening again, the written protocol will be modified appropriately.

2.4 Seametrics DL75 Data Loggers (Surface Runoff and Interflow)

Surface runoff is measured from each trial cover using individual Seametrics flowmeters, each connected to an individual Seametric DL75 data logger. Interflow from CT#3A, CT#3B and CT#4 is also measured with a similar setup (in addition to tipping buckets, as discussed in Section 2.2.6). Each of these nine flowmeters is located in a monitoring hut, with the flow directed to them through a series of buried drainage pipes, as illustrated in Figure 5.

The data loggers record an instantaneous flow rate every 60 seconds. This data is used to calculate an incremental flow volume. In addition, each data logger calculates a total volume and flow rate over a user specified timeframe, in this case the entire 2005 season (June to October). This surface runoff data is presented in Figures 47 through 51 and the interflow data is presented in Figure 52. There is no surface runoff data recorded for CT#3B and no interflow data for CT#3A and CT#4.

All flowmeters are performing as expected. Initially, SRK was concerned that the flowmeters were not working, since some significant rainfall events had occurred, but no runoff was recorded. Field staff, who visited the site almost daily throughout the 2005 field season, however confirmed that they did not see any discernable runoff collect in the runoff drains at any time.

It should however be noted that the flowmeters will not record very low flows. Therefore, if the runoff is very low, there will be no record of it. Since it was anticipated that runoff will be short duration, high intensity events, this was not considered to be a concern. Therefore a backup system to measure the very low flows, such as the tipping buckets used for interflow measurements, was not installed. During the 2006 season one or two periods of significant rainfall will be closely observed on site, and if there is an indication that a backup system is required, SRK will procure and install an appropriate system.

3 Manually Collected Instrumentation Data

3.1 M-Squared Thermistor Cables (Soil Temperature)

Four thermistor strings each with eight thermistor beads have been installed adjacent to the two strings connected to the Lakewood Systems data logger, in the Grum Overburden Dump. Their installation details are presented in Figure 9. These four thermistor strings are manually read at irregular intervals by the site staff and the raw data is reported as resistances. These resistance values are converted to soil temperatures during the post-processing phase. The measured soil temperature profiles for the 2005 season from these four strings are shown in Figures 53 through 56. All thermistor strings performed as expected.

3.2 Sentek Sensor Technologies Diviner 2000 (Soil Volumetric Moisture Content)

Each trial cover has six to eight vertical PVC access tubes, as illustrated in Figure 5. A Sentek Senor Technologies Diviner 2000 probe is inserted manually into each of these tubes to record an instantaneous reading of the soil volumetric moisture content profile at 10 cm intervals. Data was collected throughout the 2005 monitoring season from each of the 40 access tubes on an irregular schedule. However, for most of the period, daily readings were taken. Data is recorded using a portable data logger, and expresses the results in terms of relative volumetric moisture content. During the post-processing stage, material specific calibration curves are applied. Figures 57 through 96 present the final volumetric moisture content profiles for each access tube. Data collected from these tubes confirm that the instrument performed as expected.

The data gap during September 2005 in Figures 57 through 96 is due to an error in the post-processing program, which in turn was used to plot the data in this report. Whilst this will be corrected, a manual check of the data has confirmed that there is in fact regular and sensible data for this period in the database.

4 In-Situ Geotechnical Testing

4.1 Saturated Hydraulic Conductivity

In-situ saturated hydraulic conductivity testing was carried out on all the trial covers from August 2 to 9, 2005 using single ring infiltrometers and a Guelph permeameter. A summary of the testing carried out is listed in Table 2, and Figure 9 presents a location plan for each of these tests.

Table 2: Summary of In-Situ Saturated Hydraulic Conductivity Tests

Trial Cover	Material Tested	Test Type	Number of Tests
CT#1	Till	Guelph permeameter	18 shallow; 9 deep
		Ring infiltrometer	6
CT#2A	Till	Guelph permeameter	18
		Ring infiltrometer	6
CT#2B	Till	Guelph permeameter	19
		Ring infiltrometer	6
CT#3A	Till	Guelph permeameter	18
	Glacio-Fluvial	Ring infiltrometer	3
	Till	Ring infiltrometer	3
CT#3B	Till	Guelph permeameter	18
	Glacio-Fluvial	Ring infiltrometer	3
	Till	Ring infiltrometer	3
CT#4	Till	Guelph permeameter	18 shallow; 4 deep
		Ring infiltrometer	6

The ring infiltometer tests consisted of single ring infiltrometer tests, using 58 cm diameter rings with 30 cm wall height cut from a standard 44 gallon (210 litre) fuel drum. A level platform was excavated into the cover material before pushing the ring at least 5 to 10 cm into the profile. The ring was filled with a head of water of between 10 and 15 cm, and continuously refilled until such time as the head remained constant.

The bulk of the Guelph infiltrometer tests were conducted at a constant depth of 20 cm below ground surface, with each test carried out using a constant head of 5 and 10 cm. Normally a soil auger is used to drill the pilot hole. However, the till had hardened through severe desiccation and it was not possible to develop a pilot hole with the auger. As a consequence, pilot holes had to be created by pounding in a steel bar to the required depth. Some tests at trial covers CT#1 and CT#4 were carried out at depths of 40 cm, 60 cm and 80 cm.

Summary tables of the ring infiltrometer and Guelph permeameter test results are included as Appendices C and D, respectively, and the complete individual field data sheets for all ring and Guelph permeameter tests are included as Appendices E and F, respectively.

These in-situ tests are not intended to provide absolute results, but rather provide a means for determining the relative changes that occur in the cover material over time. As monitoring progresses over the next few years, changes in trends will be observed and are considered more important that the absolute values recorded. In-situ saturated hydraulic conductivity testing is inherently difficult and many factors may influence the reliability of absolute values.

4.2 In-Situ Density Testing

In-situ density testing, using a Troxler nuclear density probe was carried out on each of the trial covers on August 5, 2005. The testing was carried out by qualified technicians from EBA Engineering Ltd., Whitehorse. Table 3 summarizes the tests completed, and Appendix G contains complete data sheets for the testing. It should be noted that all the data is expressed as a percentage of standard Proctor compaction using a maximum dry density value of 2,130 kg/m^3 and an optimum moisture content of 9.5%. These values correspond to material testing on the till, and do not reflect the conditions on the glacio-fluvial material covering CT#3A and CT#3B. Appropriate corrections to the data on those trial covers are warranted.

Table 3: Summary of In-Situ Density Tests

Trial Cover	Material Tested	Number of Tests	Average Moisture Content (%)	Average Dry Density (kg/m^3)	Standard Proctor Compaction (%)
CT#1	Till	18	6.3	2,005	94.1
CT#2A	Till	15	5.5	2,096	98.4
CT#2B	Till	16	5.0	1,968	92.4
CT#3A	Glacio-Fluvial	18	2.8	1,981	93.0
CT#3B	Glacio-Fluvial	18	2.9	1,963	92.1
CT#4	Till	15	4.9	2,095	98.4

Again, the in-situ density data will be used for relative comparison changes in the soil profile over time, and the absolute values recorded are of less importance. In-situ density testing using a Troxler alone, although calibrated for the site specific soils, can be fraught with complexities. Therefore, at the appropriate times, suitable backup testing will be carried out, such as sand-cone replacement tests.

5 Action Items

This report documents the first season of data collected for the trial covers constructed on the Vangorda waste rock pile. The trial covers were constructed in September 2004, and the instrumentation installation was carried out in June 2005. Instrumentation was commissioned in June 2005, and shut down on October 26, 2005, when the ground temperatures remained consistently below freezing, effectively shutting down the system water balance. The 2005 monitoring period missed the May freshet period. Data collection and instrumentation performance was good, with the exception of the solar panel failure on data logger CR10X #2, which resulted in partial data loss of data for about one month. The following is a list of recommendations that should be implemented to ensure that the 2006 monitoring is successful:

- The instrumentation should be re-commissioned in 2006 prior to the freshet; probably late April or early May.
- The programming error for the Campbell Scientific data logger CR10X #2 should be fixed. Ensuring that Array 114 outputs a daily summary of the data, including the battery voltage, will assist to identify potential future power supply problems.
- The written protocol should be modified to require field staff to carry out a manual diagnostic test on the battery and solar panel of each Campbell Scientific and Vantage Pro data logger. This will require that a multi-meter be procured for use by the site staff.
- The Grum Overburden Dump Lakewood UL 16 data logger thermistor data has been presented in its raw format. When the instrumentation is re-commissioned in 2006, the logger data should be re-downloaded using the appropriate formats. A detailed procedure, specifying the required format will be provided by SRK.
- All the Davis Instruments weather and satellite stations should be equipped with new batteries. A complete set of spare batteries should be procured and left on site in case of a failure during the season.
- During at least two significant rainfall events, a detailed visual assessment of the cover performance should be made to ensure that the runoff monitoring systems are working effectively. If the flowmeters are not recording the data adequately, consideration should be given to adding low flow tipping bucket gauges.
- The manual Grum Overburden Dump thermistors should be read at a bi-weekly frequency (i.e. once every two weeks), and whenever possible, the manual moisture content profiles should be measured daily.
- A detailed monitoring protocol for the 2006 season will be provided by SRK for the site monitoring staff at the time of system re-commissioning. This monitoring protocol will include a checklist of items to inspect.

The in-situ geotechnical testing yielded good quality data within the constraints of the measurement techniques used. A similar program should be carried out during August 2006. However, the following specific recommendations should improve the quality of the data:

- A power auger should be supplied to drill the pilot holes for the Guelph permeameter tests. This should simplify the effort required to make the holes, as well as provide a less disturbed hole for testing. The use of a power auger will also allow testing of the saturated hydraulic conductivity over a longer profile.

- The tension infiltrometer attachment to the Guelph permeameter should be used to test the actual surface hydraulic conductivity.

- EBA Engineering should again be commissioned to carry out a series of in-situ field density testing on each of the trial covers. The testing should however be expanded to some tests on the till density in CT#3A and CT3#B as well. SRK will supply EBA with the appropriate Proctor compaction specifications for all material types prior to submission of the field data sheets.

- A secondary method of in-situ density testing, such as sand-cone replacement tests, should be used to support the Troxler data.

This draft report, "**Anvil Range Mining Complex, Monitor Mine Waste Rock Trial Covers, 2005 Data Summary: 2005/06 Task 20a"**, has been prepared by SRK Consulting (Canada) Inc.

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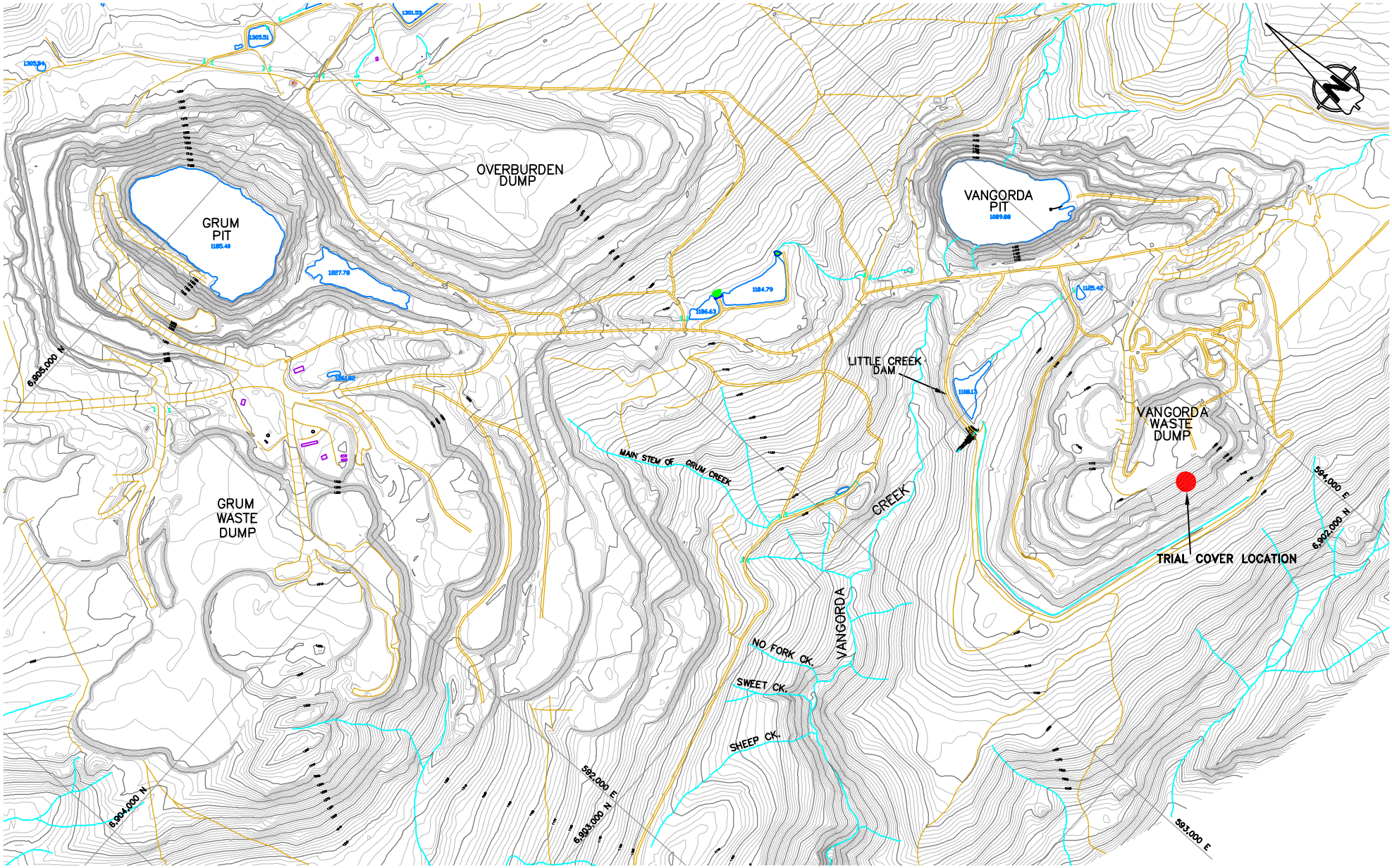
Janowicz, J.R., Hedstrom, N.R., Granger, R.J. (2005). Investigation of Anvil Range Mining Corporation (Faro) Waste Dump Water Balances – 2003/04 Water Year – Preliminary Water Balance. Report prepared for SRK Consulting Inc. on behalf of Deloitte & Touche Inc., March.

Janowicz, J.R., Hedstrom, N.R., Granger, R.J. (2006). Investigation of Anvil Range Mining Corporation (Faro) Waste Dump Water Balance – Final Water Balance – Draft. Report prepared for SRK Consulting Inc. on behalf of Deloitte & Touche Inc., May.

SRK Consulting (Canada) Inc. (2006). Anvil Range Mining Complex Mine Waste Rock Trial Covers As-Built Report, Faro, Yukon, Canada. Consultants report submitted to Deloitte & Touche Inc. on behalf of the Faro Mine Closure Planning Office, Project No. 1CD003.051, Authored by M. Rykaart, April 2006.

Figures



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Acad–Vangorda–Grum\Acad–2006\ site_plan_Thermistor.dwg

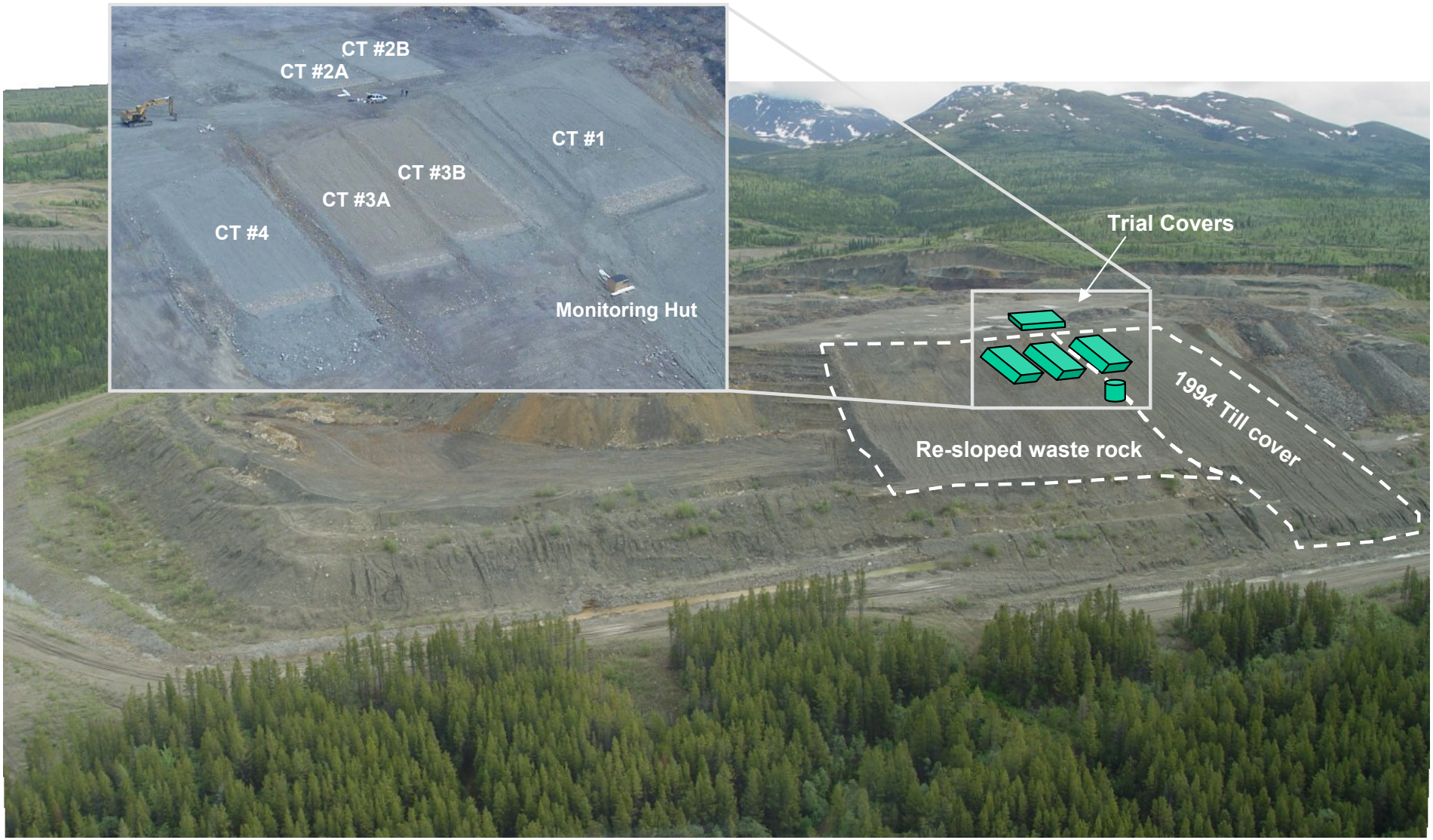
Deloitte & Touche

Anvil Range Mining Complex

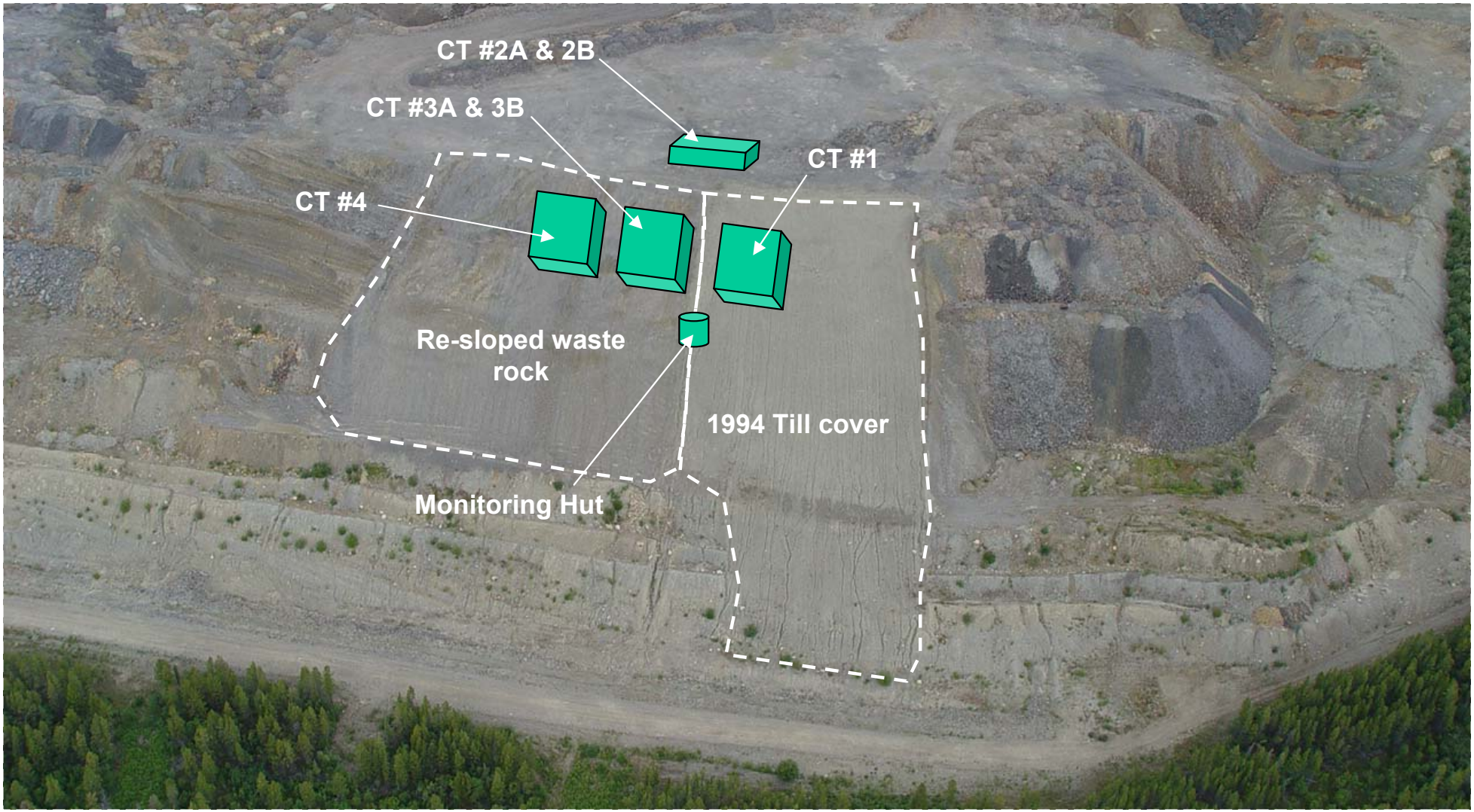
Monitor Mine Waste Rock Trial Covers
2005 Data Summary

Location Plan for Trial Covers

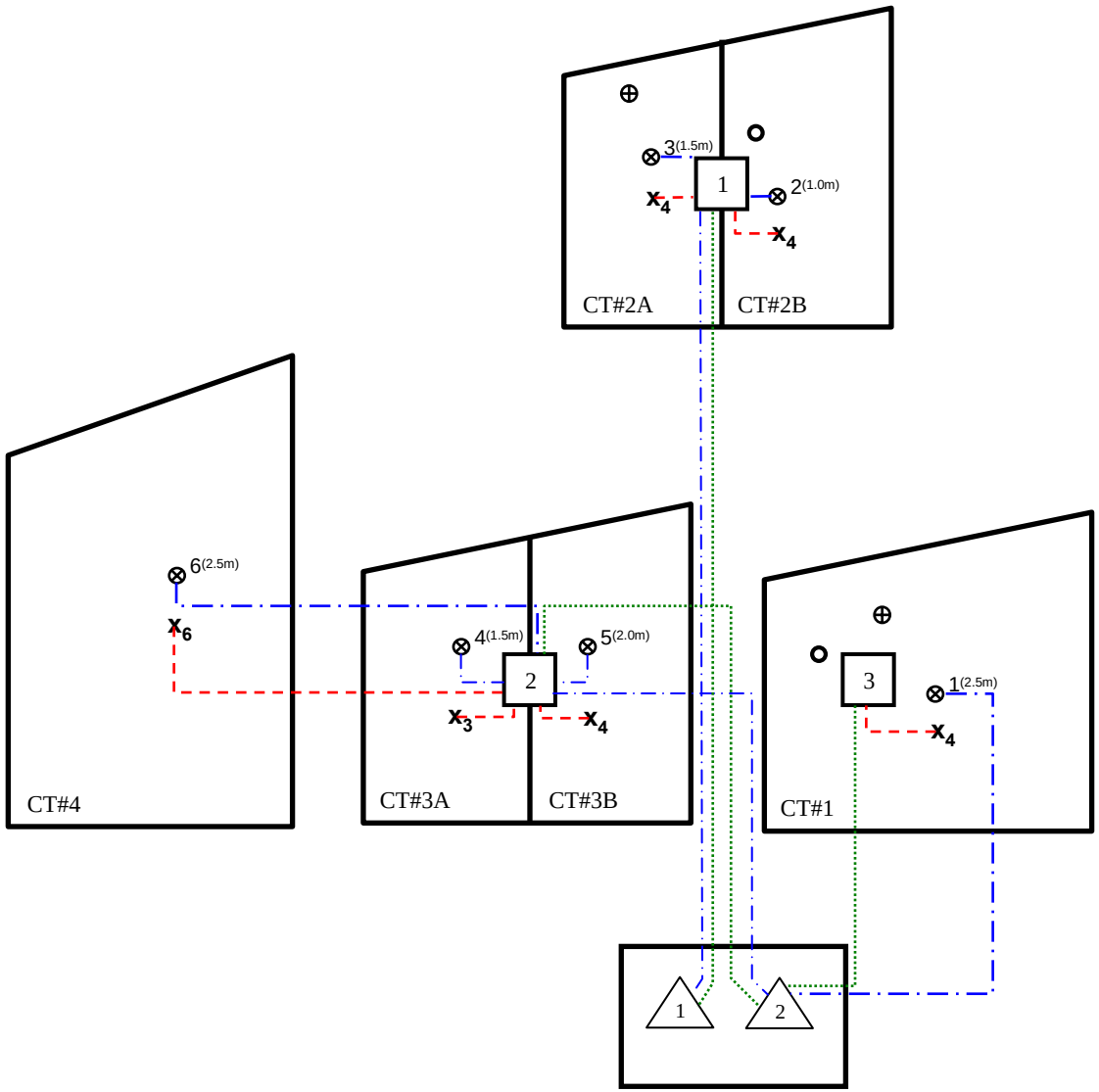
DATE:	APPROVED:	FIGURE:
Mar. 2006	EMR	1



SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	Monitor Mine Waste Rock Trial Covers 2005 Data Summary
		Looking towards the trial covers on Vangorda Waste rock pile
Job No: 1CD003.071 Filename: Figures 4 to 8_20060322.ppt	**Anvil Range Mining Complex**	Date: March 2006 | Approved: EMR | Figure: **2**



SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	Monitor Mine Waste Rock Trial Covers 2005 Data Summary
		Arial view of trial cover layout
Job No: 1CD003.071 Filename: Figures 4 to 8_20060322.ppt	**Anvil Range Mining Complex**	Date: March 2006 | Approved: EMR | Figure: **3**



Legend:

- # — AM16/32 Multiplexer
- # — CR10X Datalogger
- ⊕ — Satellite Station
- o — Weather Station
- ⊗ 1(2.5m) — EnviroSCAN Probe #(#m rail) & Communication Wire
- x4 — CS229 Thermal Conductivity Sensor (# sensors in profile) & Lead wires
- ..... — Multiplexer Communication Wire

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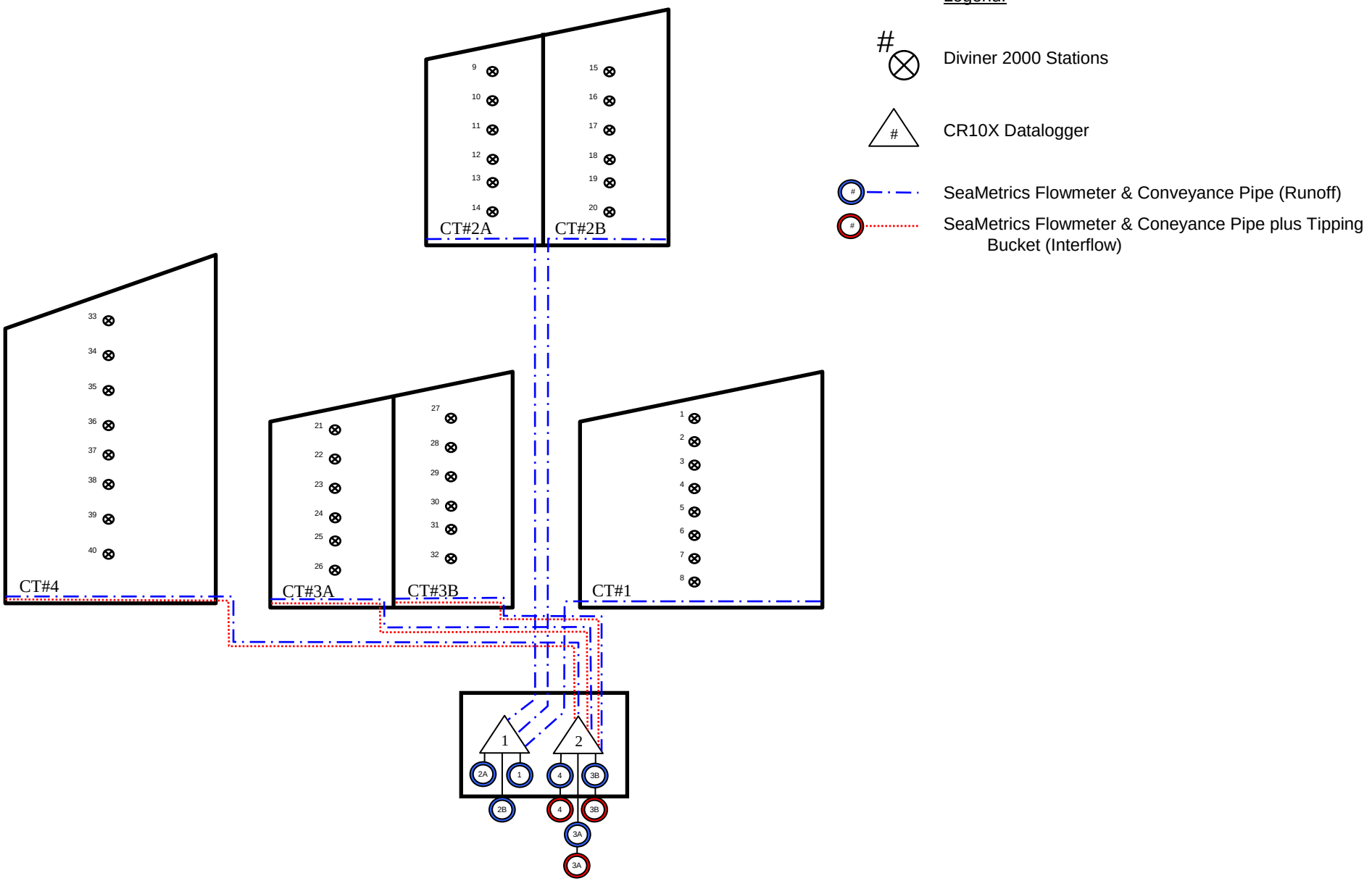
Anvil Range Mining Complex

Job No: 1CD003.071
Filename: Figures 4 to 8_20060322.ppt

Monitor Mine Waste Rock Trial Covers
2005 Data Summary

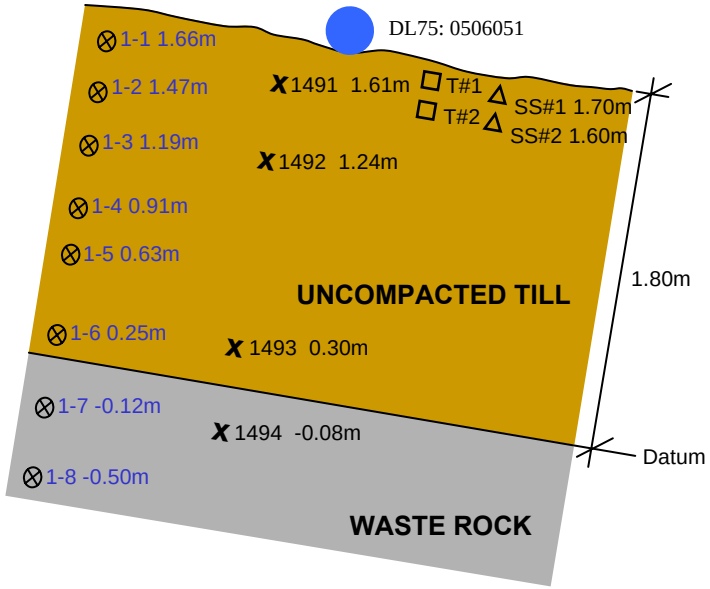
Schematic trial cover layout showing automated soil suction, moisture instrumentation, datalogger as well as weather and satellite station locations

Date:	Approved:	Figure:
March 2006	EMR	4

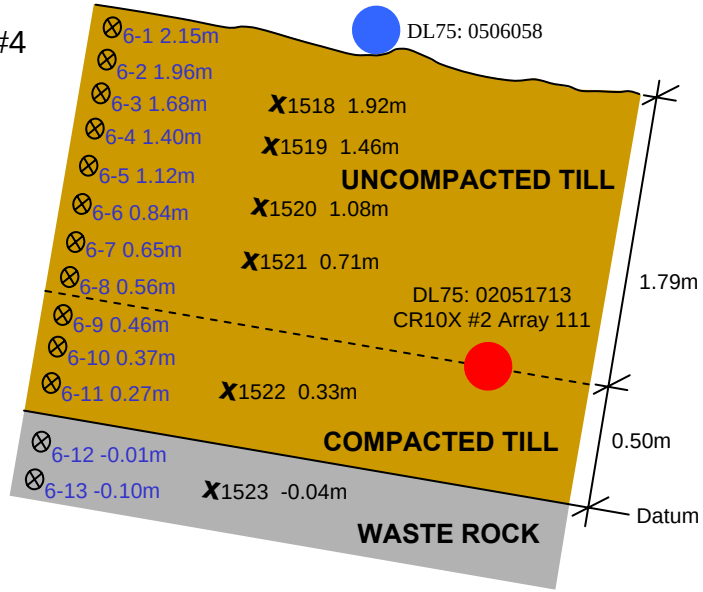


SRK Consulting Engineers and Scientists VANCOUVER	Deloitte & Touche	Monitor Mine Waste Rock Trial Covers 2005 Data Summary
		Schematic trial cover layout showing Diviner 2000 stations, surface runoff, and interflow measurement locations
Job No: 1CD003.071 Filename: Figures 4 to 8_20060322.ppt	**Anvil Range Mining Complex**	Date: March 2006 / Approved: EMR / Figure: **5**

CT#1



CT#4



Legend:

#-# #.##m	EnviroSCAN Probe, s/n and depth
# #.##m	CS229 Thermal Conductivity Sensor, s/n and depth
T## #.##m	Satellite Station Soil Temperature probe and depth
SS## #.##m	Satellite Station Soil Moisture probe and depth
DL75: # CR10X #2 Array #	Seametrics Datalogger with Flowmeter and Tipping Bucket (Interflow)
DL75: #	Seametrics Datalogger with Flowmeter (Runoff)

Note:
Depths measured from Datum
- Positive = up
- Negative = down

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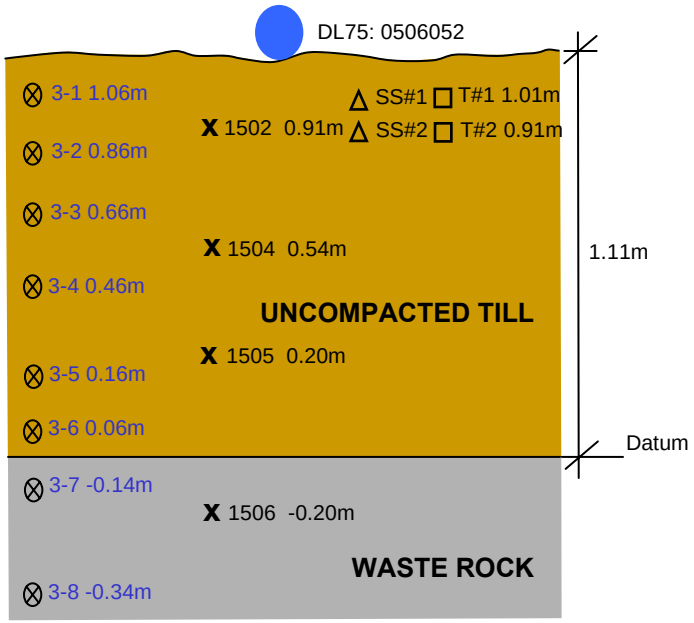
Monitor Mine Waste Rock Trial Covers
2005 Data Summary

Schematic Instrument Profiles for CT#1 and CT#4

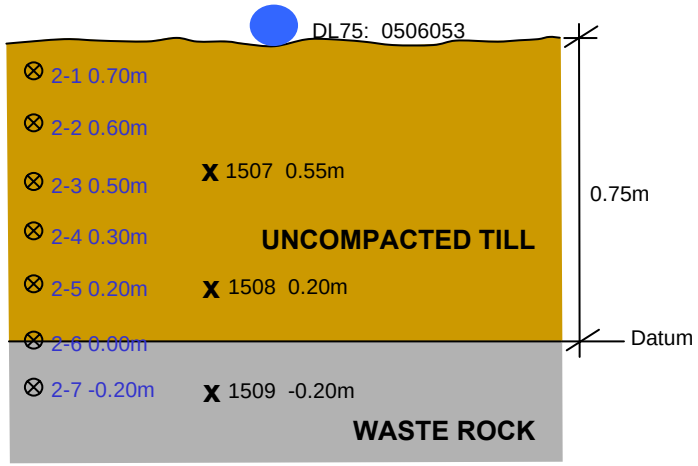
Job No: 1CD003.071
Filename: Figures 4 to 8_20060322.ppt

Anvil Range Mining Complex

Date:	Approved:	Figure:
March 2006	EMR	6



CT#2A



CT#2B

Legend:

#-# #.##m	EnviroSCAN Probe with bead s/n and depth
# #.##m	CS229 Thermal Conductivity Sensor bead s/n and depth
T## #.##m	Satellite Station Temperature probe and depth
SS## #.##m	Satellite Station Soil Moisture probe and depth
DL75: # CR10X #2 Array #	Seametrics Datalogger with Flowmeter and Tipping Bucket (Interflow)
DL75: #	Seametrics Datalogger with Flowmeter (Runoff)

Note:
Depths measured from Datum
- Positive = up
- Negative = down

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Monitor Mine Waste Rock Trial Covers
2005 Data Summary

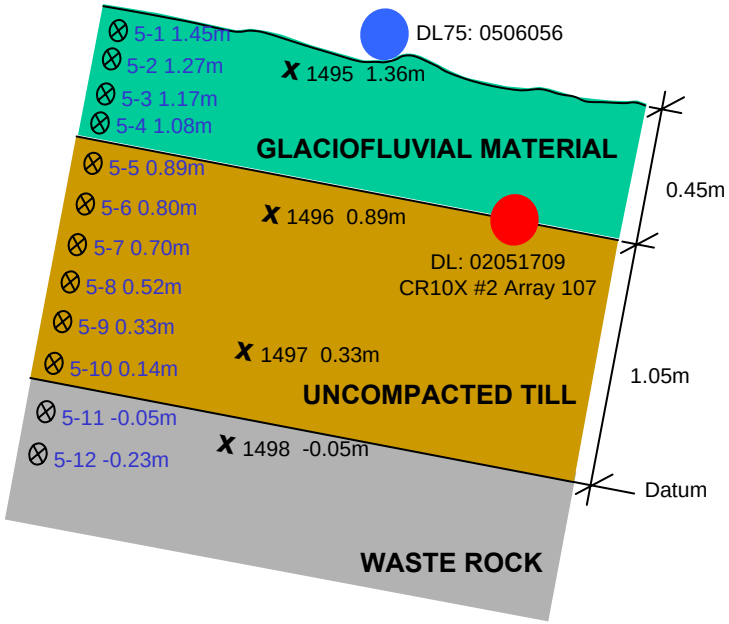
Schematic Instrument Profiles for CT#2A and CT#2B

Job No: 1CD003.071
Filename: Figures 4 to 8_20060322.ppt

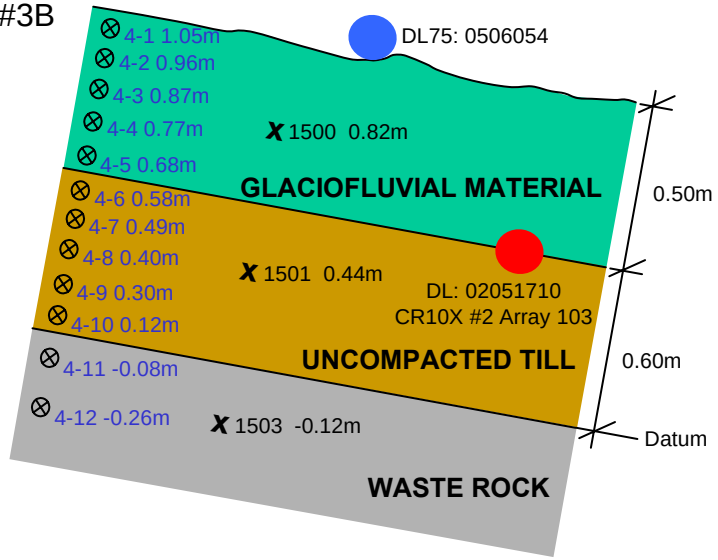
Anvil Range Mining Complex

Date: March 2006 | Approved: EMR | Figure: 7

CT#3A



CT#3B



Legend:

#-# #.##m	EnviroSCAN Probe with bead s/n and depth
X # #.##m	CS229 Thermal Conductivity Sensor bead s/n and depth
T## #.##m	Satellite Station Temperature probe and depth
SS## #.##m	Satellite Station Soil Moisture probe and depth
DL75: # CR10X #2 Array #	Seametrics Datalogger with Flowmeter and Tipping Bucket (Interflow)
DL75: #	Seametrics Datalogger with Flowmeter (Runoff)

Note:
Depths measured from Datum
- Positive = up
- Negative = down

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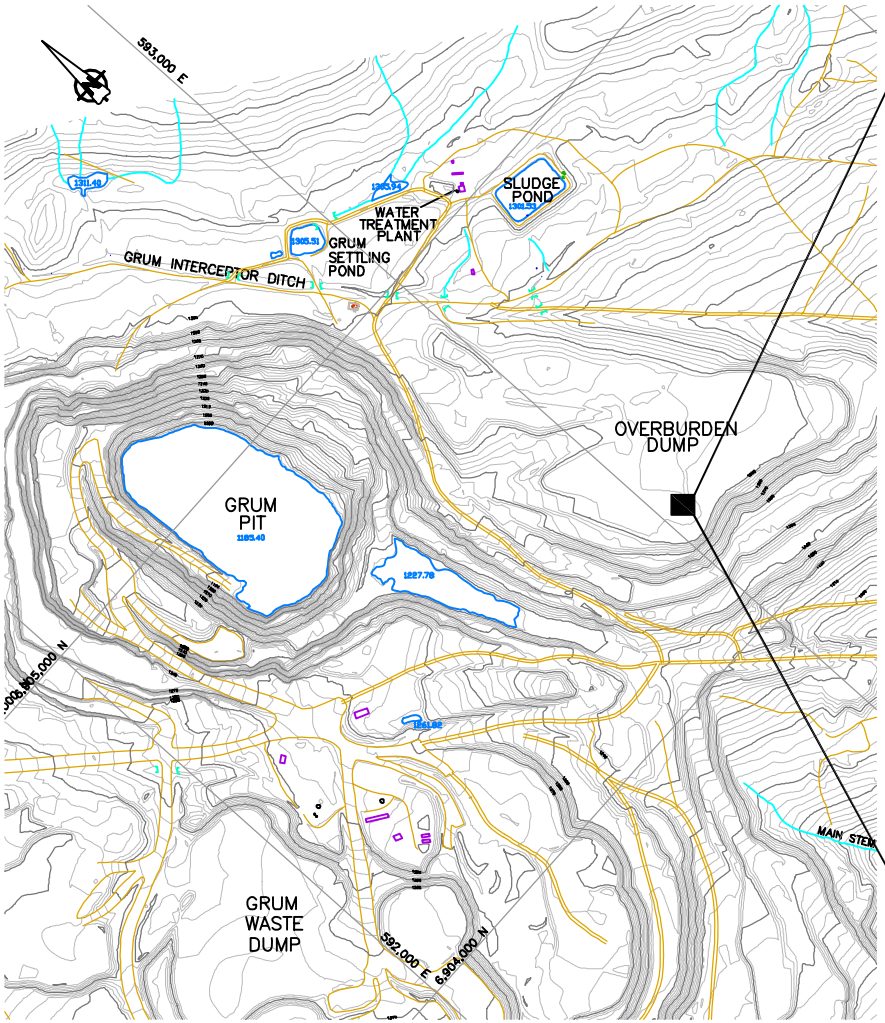
Monitor Mine Waste Rock Trial Covers
2005 Data Summary

Schematic Instrument Profiles for CT#3A and CT#3B

Job No: 1CD003.071
Filename: Figures 4 to 8_20060322.ppt

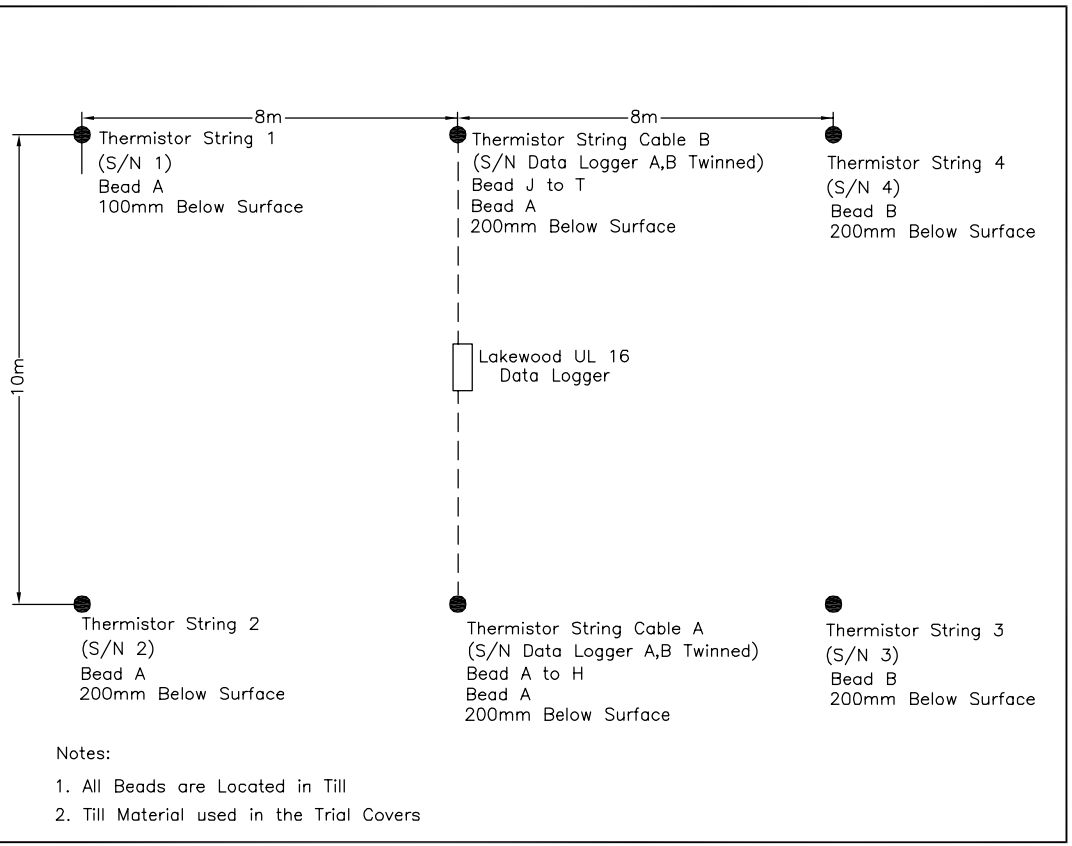
Anvil Range Mining Complex

Date:	Approved:	Figure:
March 2006	EMR	8



0 100 200 300 400 500 600 700 800 900 1000m

THERMISTOR STRING LAYOUT



Notes:

1. All Beads are Located in Till
2. Till Material used in the Trial Covers

THERMISTOR STRING PROFILES

Thermistor String 1 (S/N 1)		Thermistor String 2 (S/N 2)		Thermistor String 3 (S/N 3)		Thermistor String 4 (S/N 4)		Thermistor String Cable A (S/N Datalogger A,B Twinned)		Thermistor String Cable B (S/N Datalogger A,B Twinned)	
Bead	Depth (m)	Bead	Depth (m)	Bead	Depth (m)	Bead	Depth (m)	Bead	Depth (m)	Bead	Depth (m)
A	0.1	A	0.2	A	-0.65	A	0.2	A	0.2	J	0.2
B	0.6	B	0.7	B	-0.15	B	0.7	B	0.7	K	0.7
C	1.1	C	1.2	C	0.35	C	1.2	C	1.2	L	1.2
D	2.1	D	2.2	D	1.35	D	2.2	D	2.2	N	2.2
E	3.1	E	3.2	E	2.35	E	3.2	E	3.2	P	3.2
F	4.1	F	4.2	F	3.35	F	4.2	F	4.2	R	4.2
G	5.1	G	5.2	G	4.35	G	5.2	G	5.2	S	5.2
H	6.1	H	6.2	H	5.35	H	6.2	H	6.2	T	6.2

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Acad–Vangorda–Grum\Acad–2006\ site_plan_Thermistor.dwg

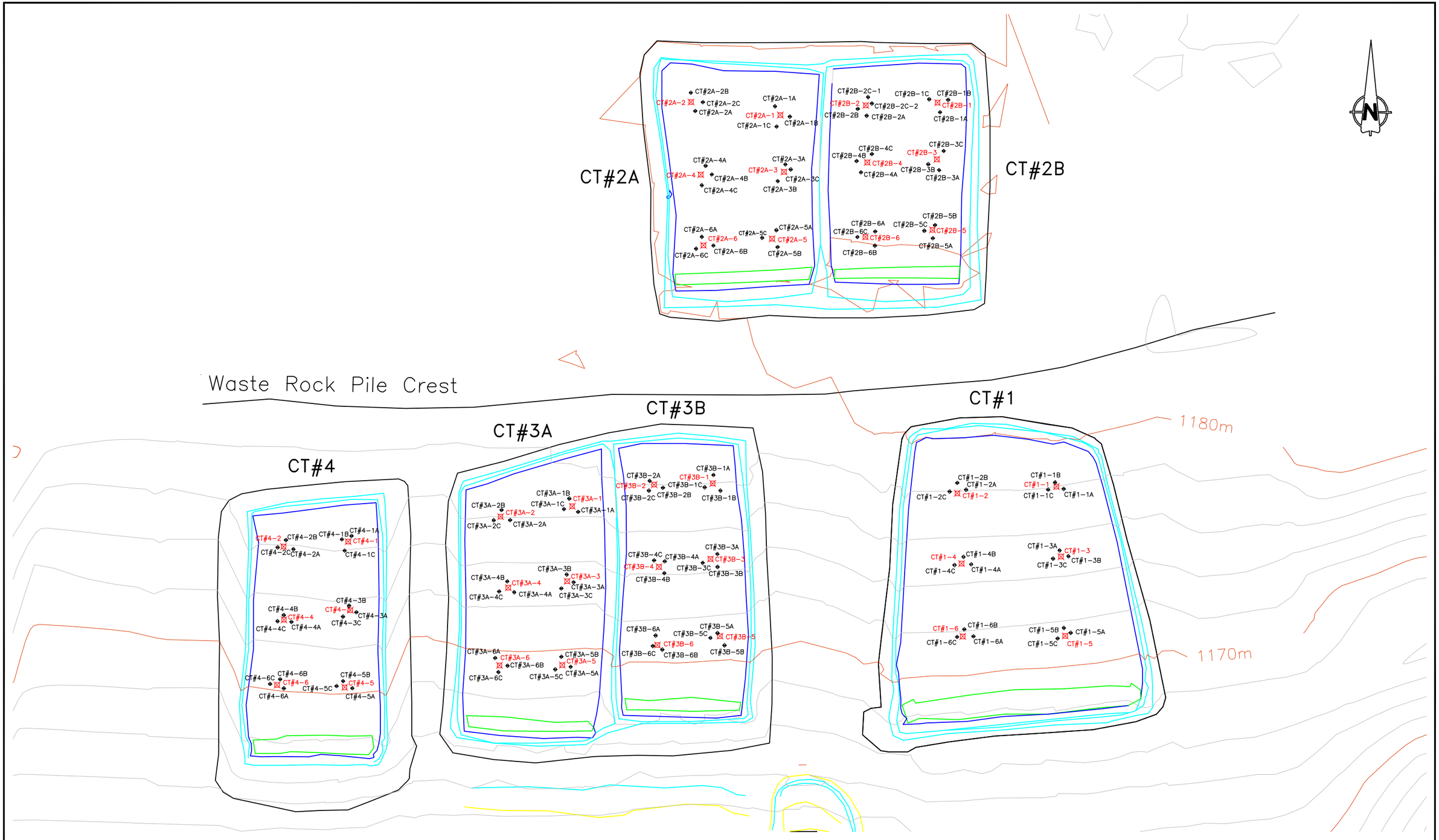
Deloitte & Touche

Anvil Range Mining Complex

Monitor Mine Waste Rock Trial Covers
2005 Data Summary

Location Plan and Schematic
Thermistor Layout on
Grum Overburden Dump

DATE:	APPROVED:	FIGURE:
Mar. 2006	EMR	9



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SRK JOB NO.: 1CD003.071

Acad-Vangorda-Grum\Acad-2006\ WasteRockPileTestCovers.dwg

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Anvil Range Mining Complex

Monitor Mine Waste Rock Trial Covers
2005 Data Summary

Location Plan for Ring Infilltrometer and Guelph Permeameter Testing

DATE:	APPROVED:	FIGURE:
Mar. 2006	E.M.R.	10

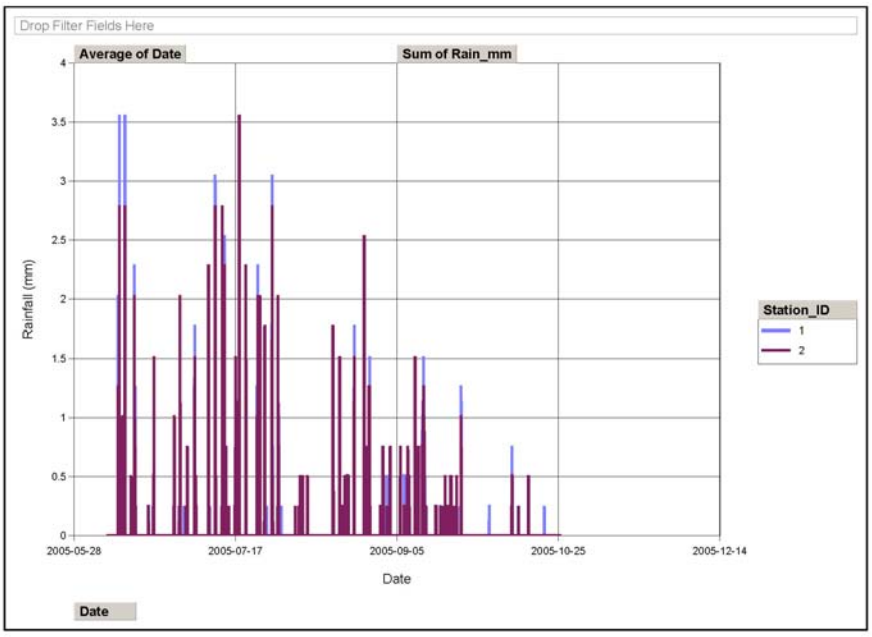

Figure 11: Total hourly rainfall on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations.

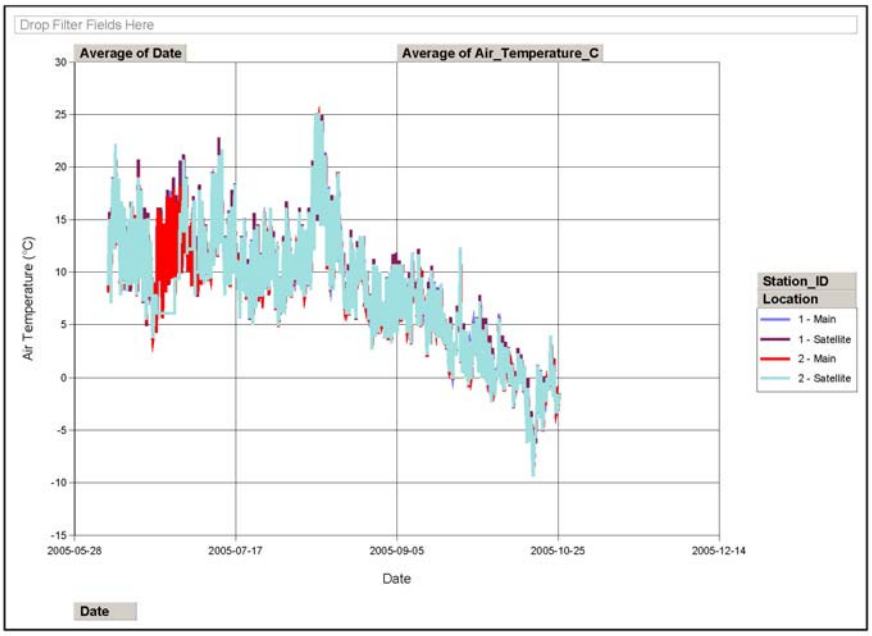

Figure 12: Mean hourly air temperature on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations and Satellite Stations.

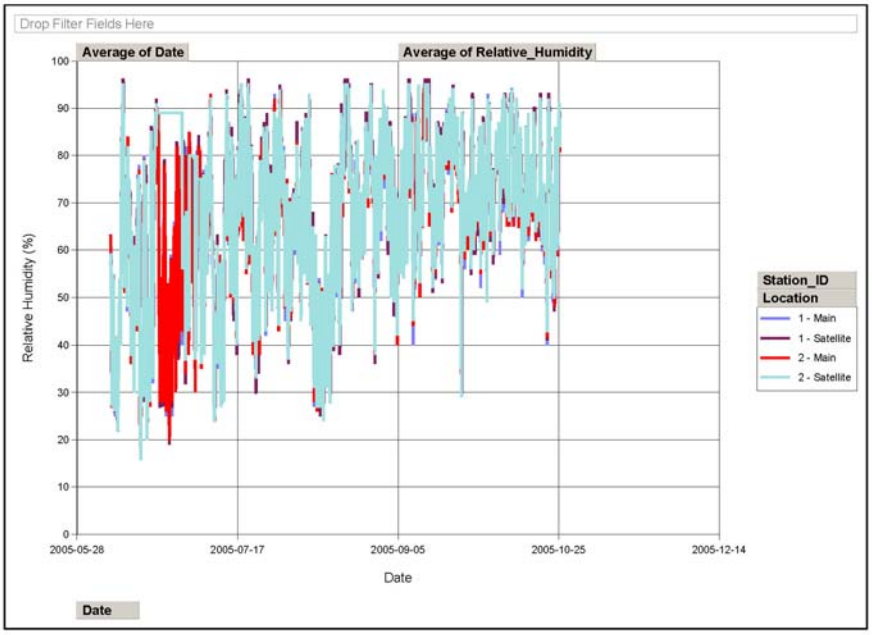

Figure 13: Mean hourly relative humidity on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations and Satellite Stations.

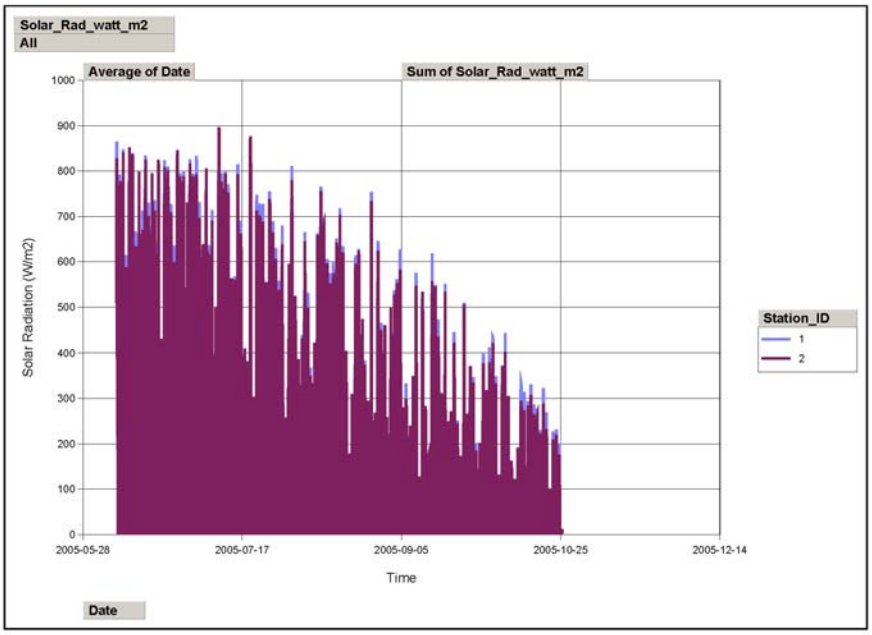

Figure 14: Mean hourly solar radiation on CT#1 & CT2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations.

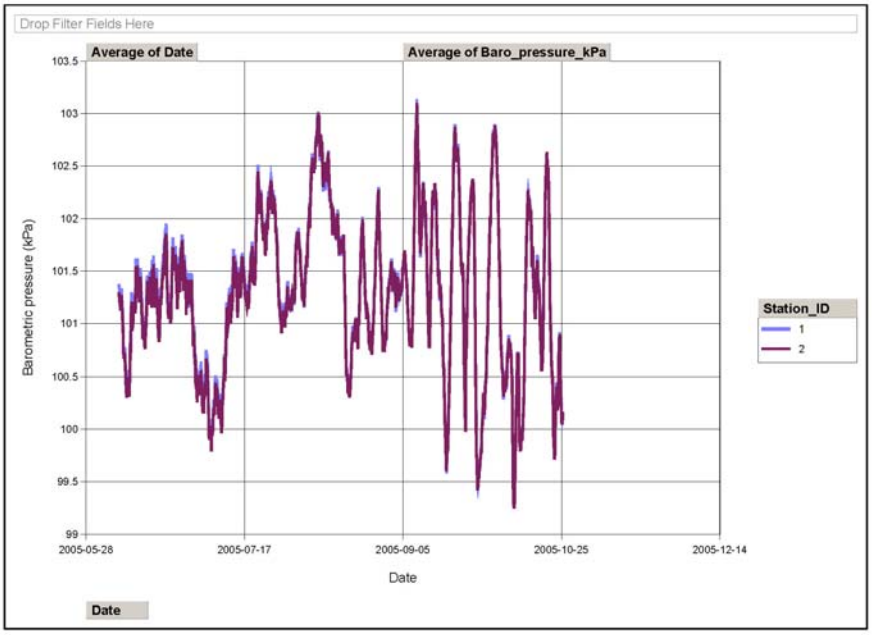

Figure 15: Mean hourly barometric pressure on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations.

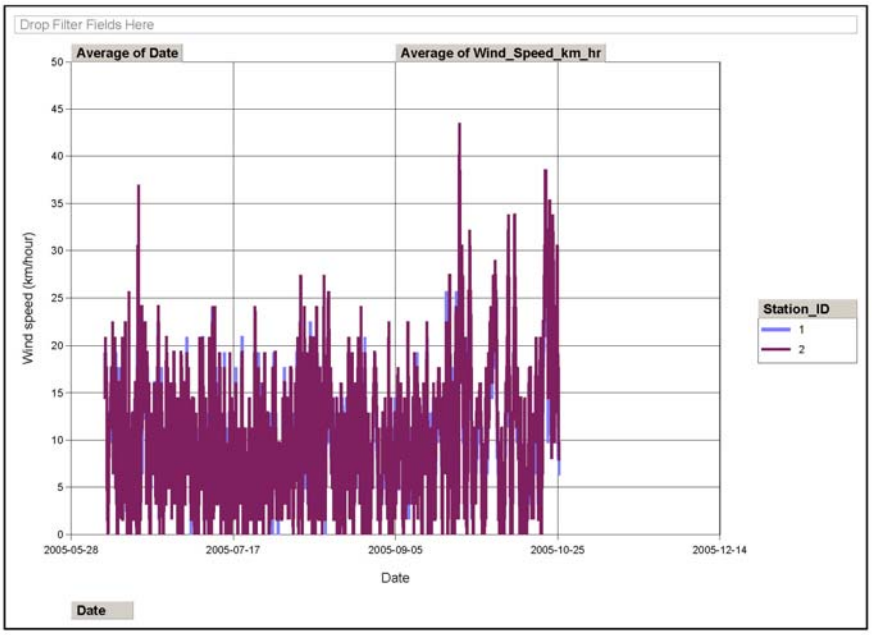

Figure 16: Mean hourly wind speed on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations.

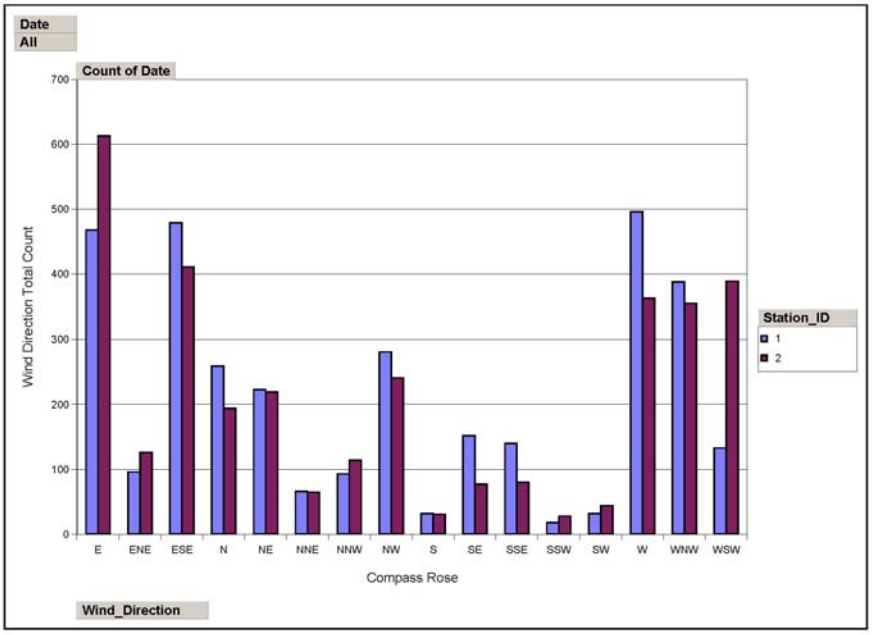

Figure 17: Wind direction totals (measured hourly) on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations.

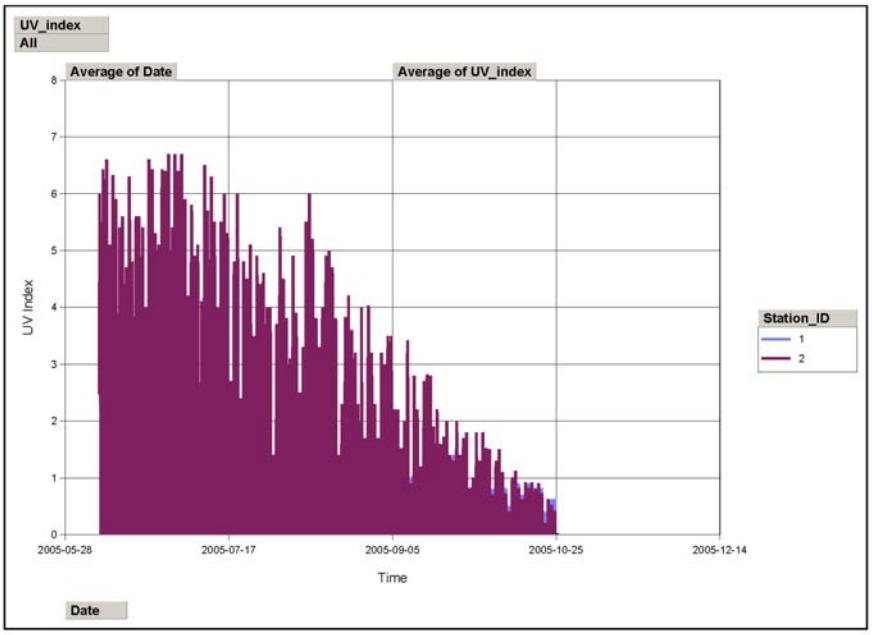

Figure 18: Mean hourly UV Index on CT#1 & CT#2A, 2B recorded by the Davis Instruments Vantage Pro Weather Stations.

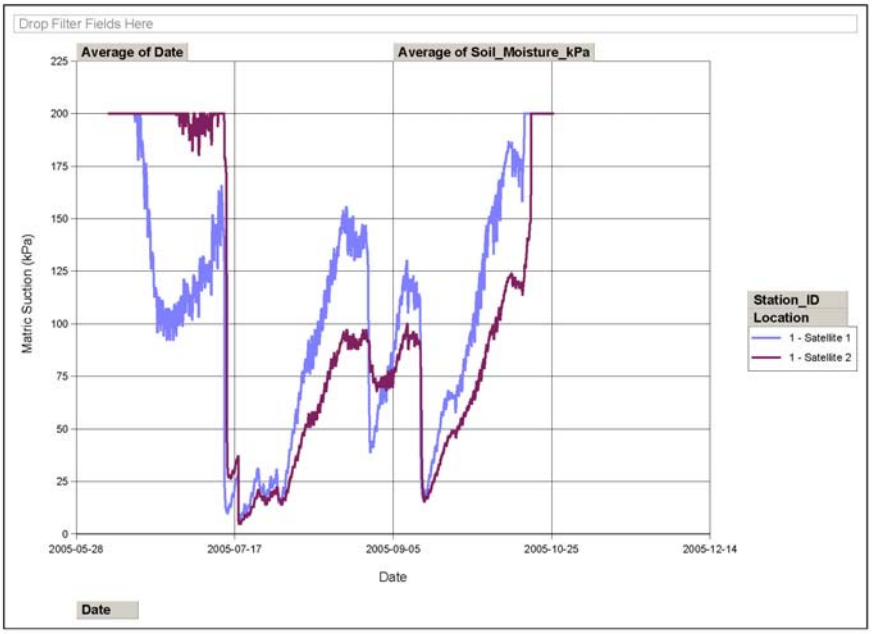

Figure 19: Mean hourly Matric Suction in CT#1 recorded by the Davis Instruments Vantage Pro Satellite Station.

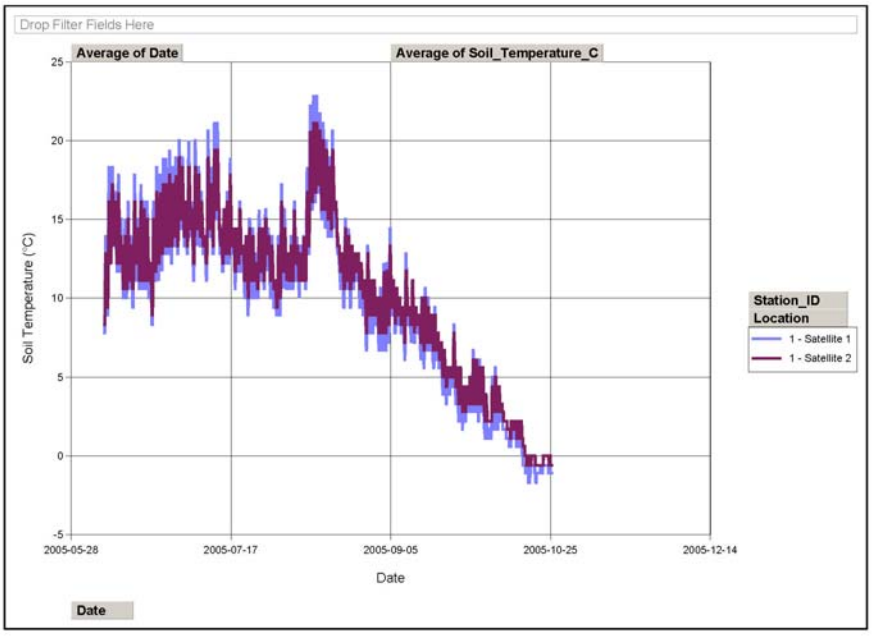

Figure 20: Mean hourly soil temperature in CT#1 recorded by the Davis Instruments Vantage Pro Satellite Station.

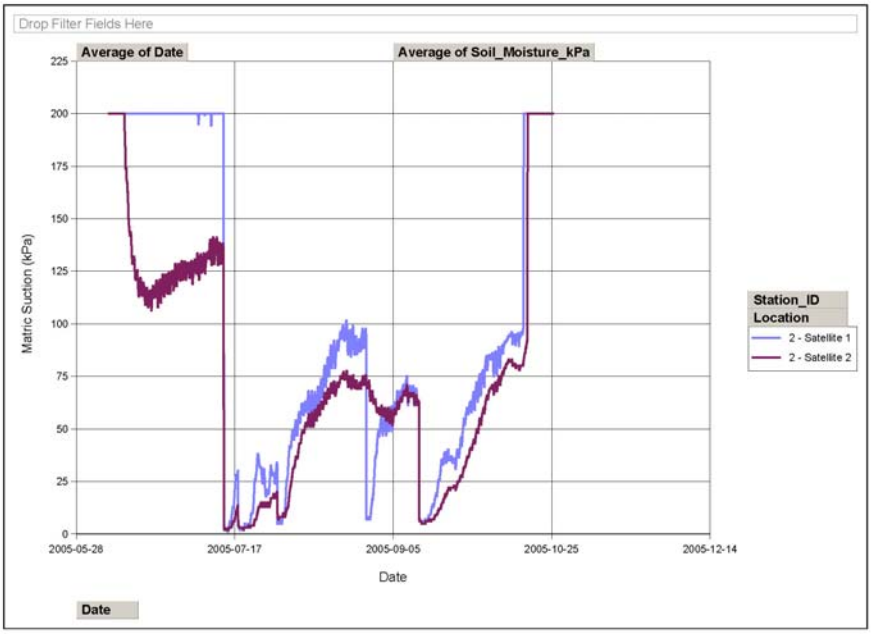

Figure 21: Mean hourly Matric Suction in CT#2A recorded by the Davis Instruments Vantage Pro Satellite Station.

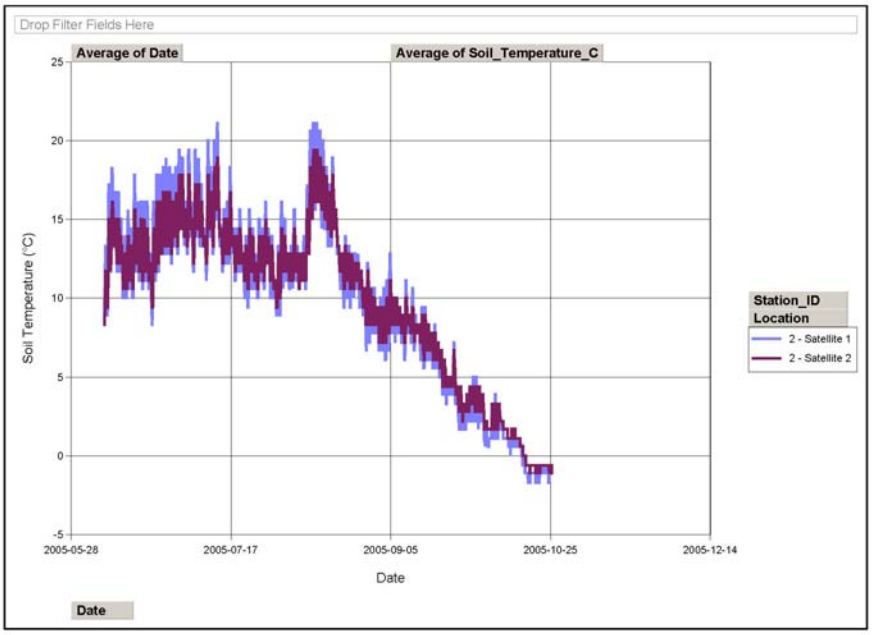

Figure 22: Mean hourly soil temperature in CT#2A recorded by the Davis Instruments Vantage Pro Satellite Station.

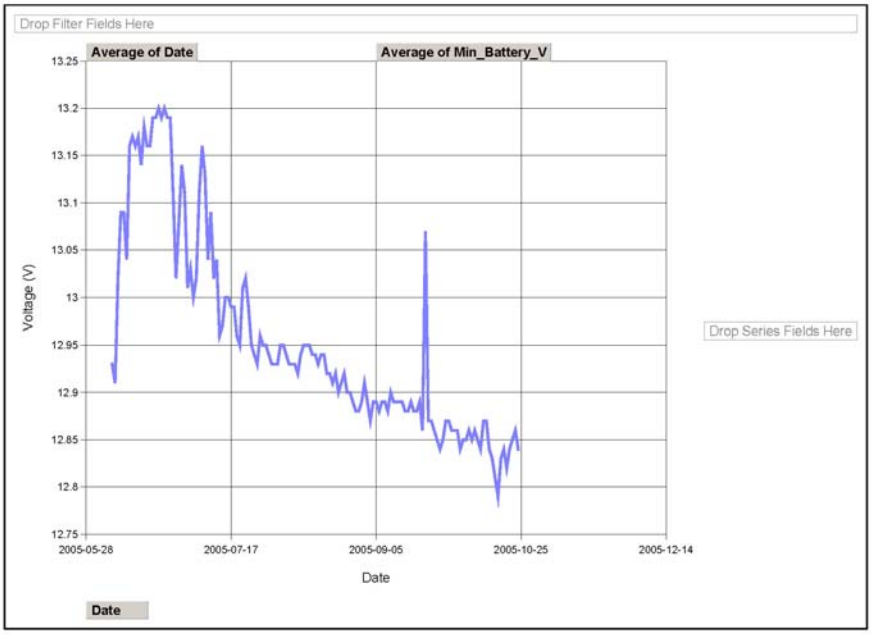

Figure 23: Daily battery voltage of the Campbell Scientific CR10X #1 Data Logger (Array 102).

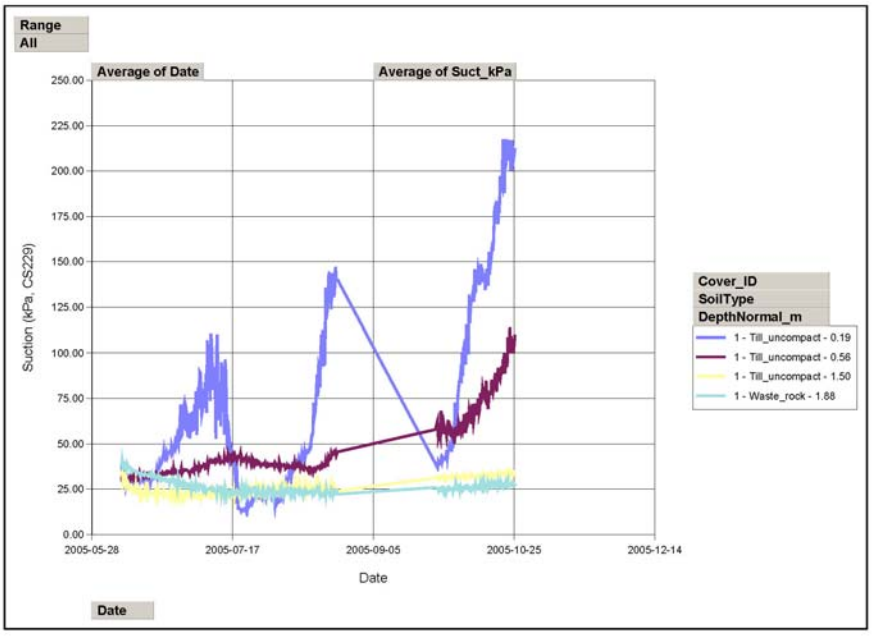

Figure 24: Soil matric suction measurements (taken every six hours) in CT#1 recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

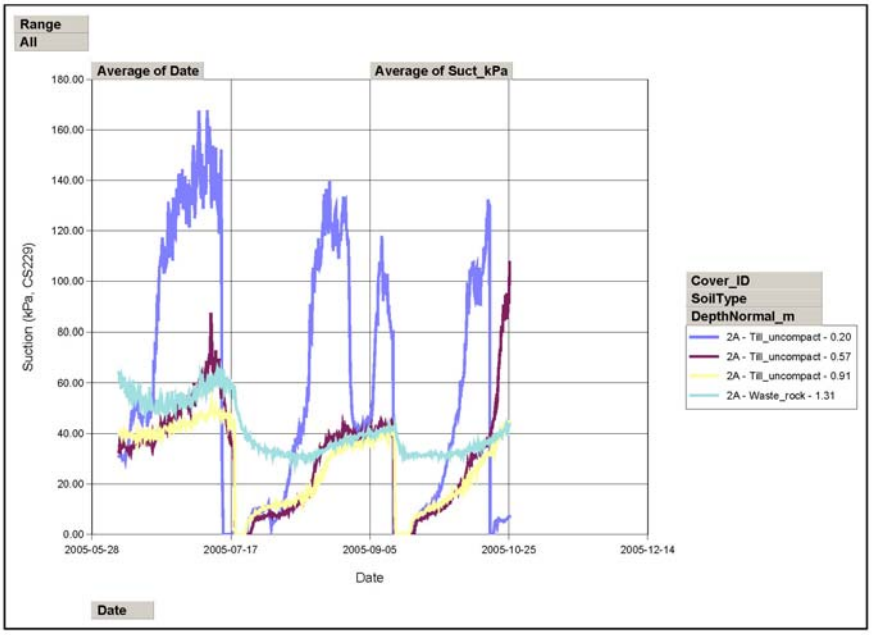

Figure 25: Soil matric suction measurements (taken every six hours) in CT#2A recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #1 (Array 130).

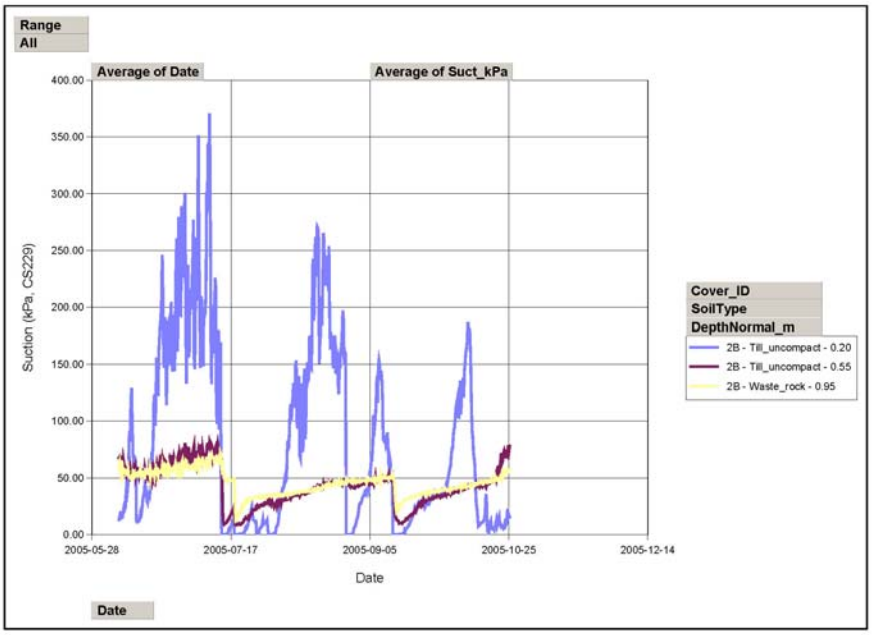

Figure 26: Soil matric suction measurements (taken daily) in CT#2B recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #1 (Array 130).

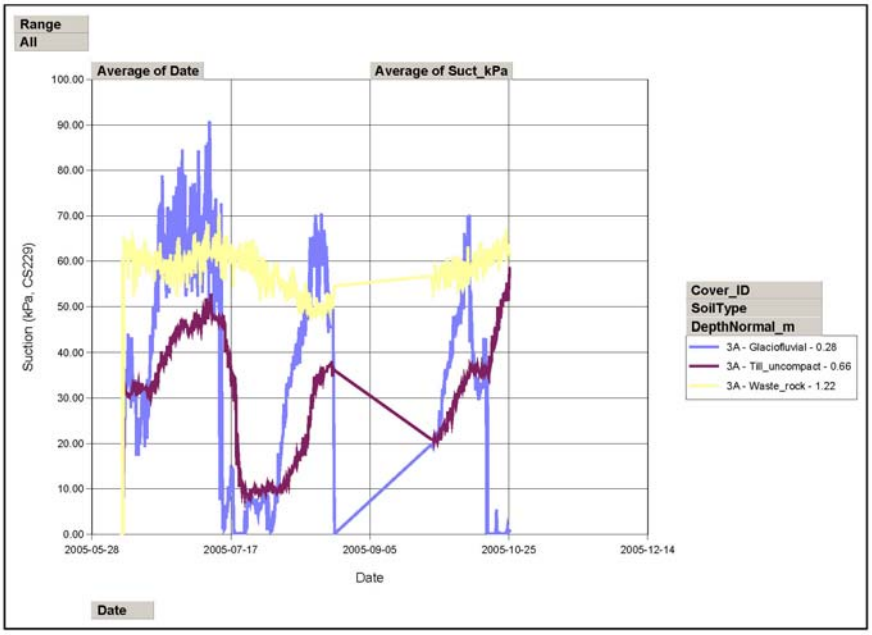

Figure 27: Soil matric suction measurements (taken every six hours) in CT#3A recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

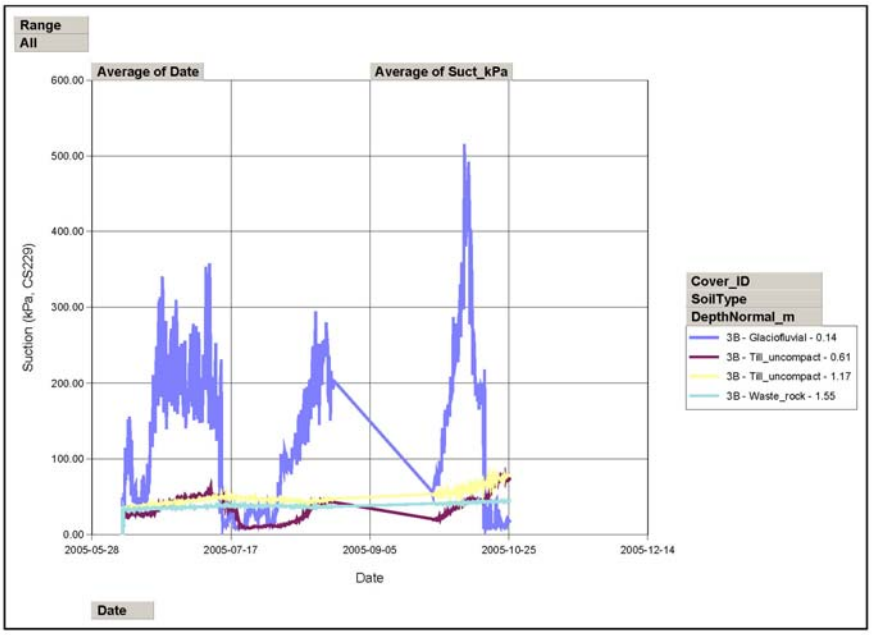

Figure 28: Soil matric suction measurements (taken every six hours) in CT#3B recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

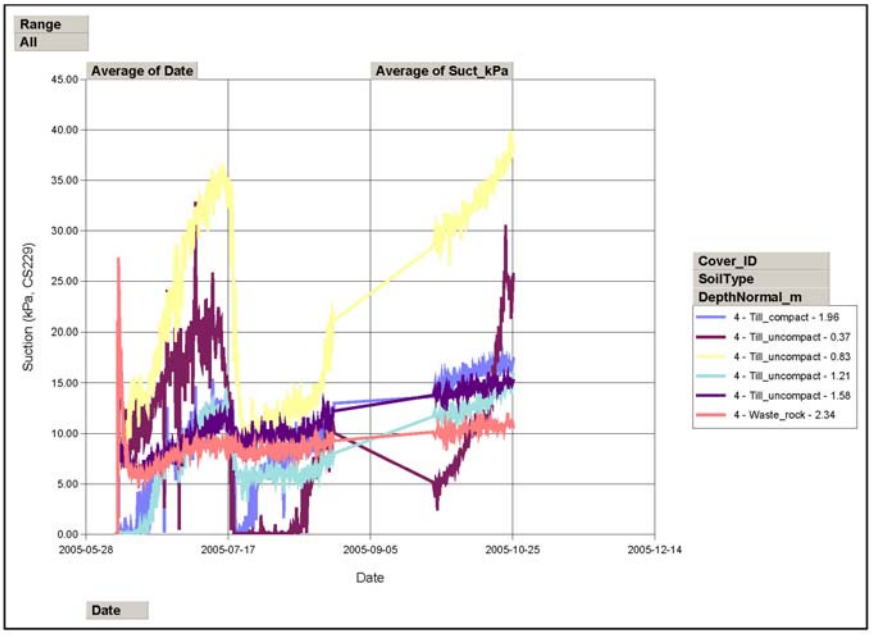

Figure 29: Soil matric suction measurements (taken every six hours) in CT#4 recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

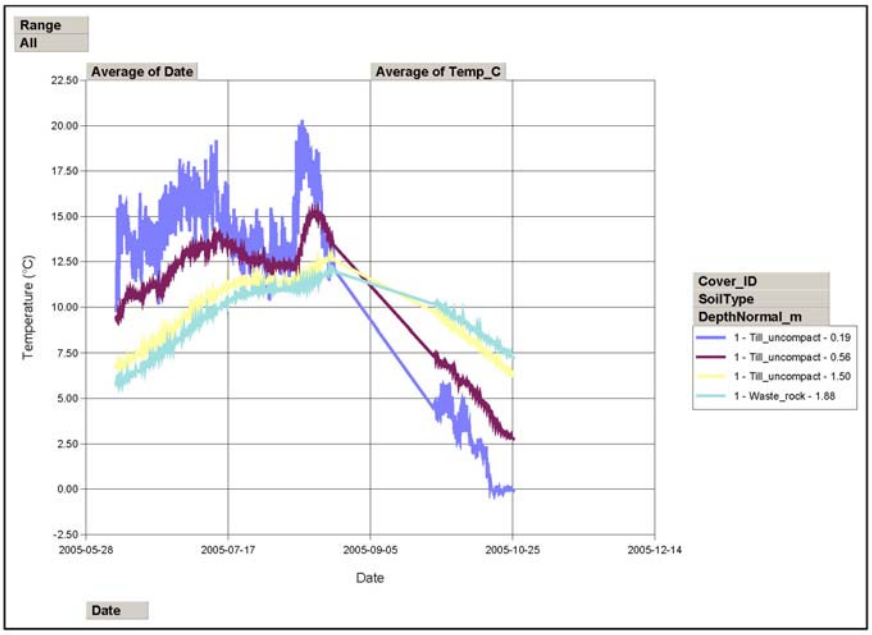

Figure 30: Soil temperature measurements (taken every six hours) in CT#1 recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

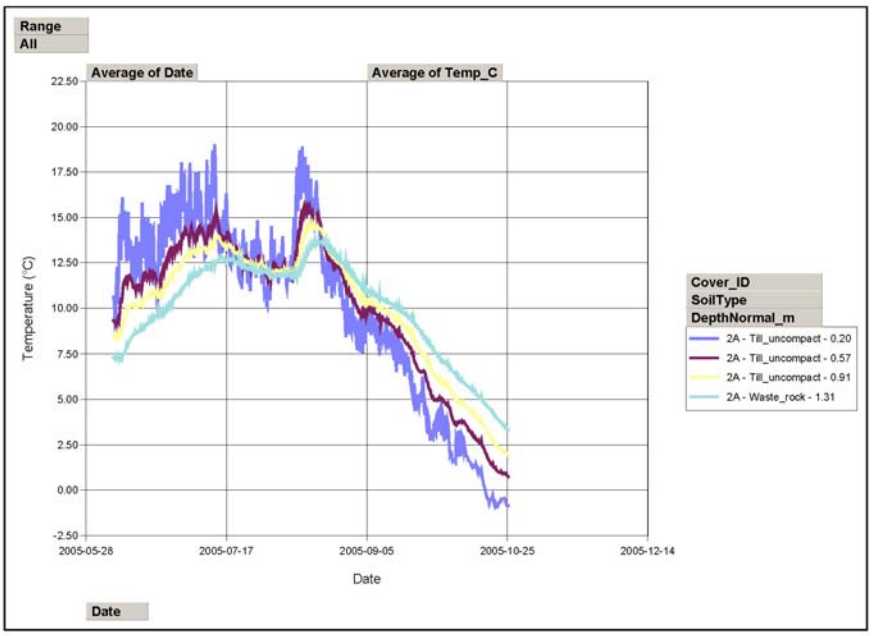

Figure 31: Soil temperature measurements (taken every six hours) in CT#2A recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #1 (Array 130).

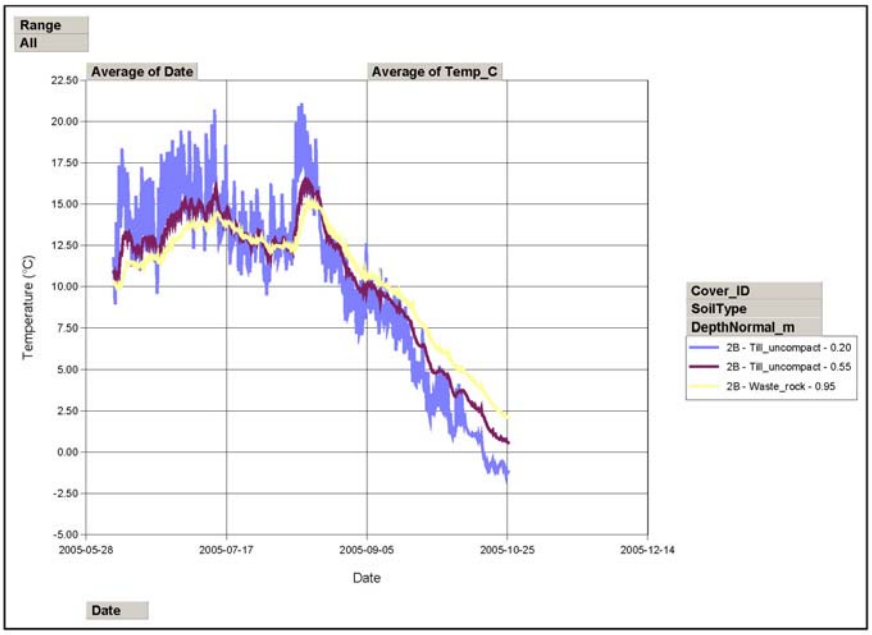

Figure 32: Soil temperature measurements (taken every six hours) in CT#2B recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #1 (Array 130).

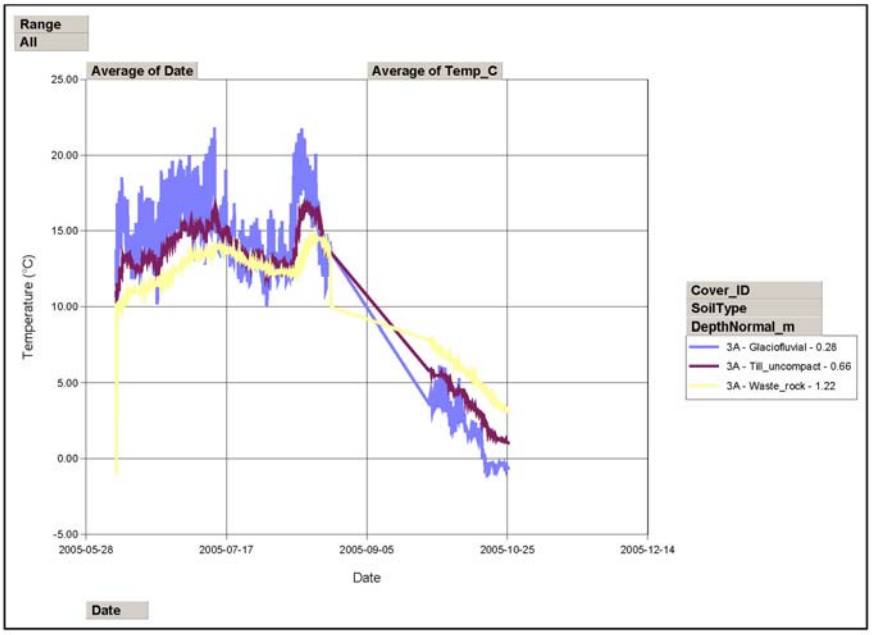

Figure 33: Soil temperature measurements (taken every six hours) in CT#3A recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

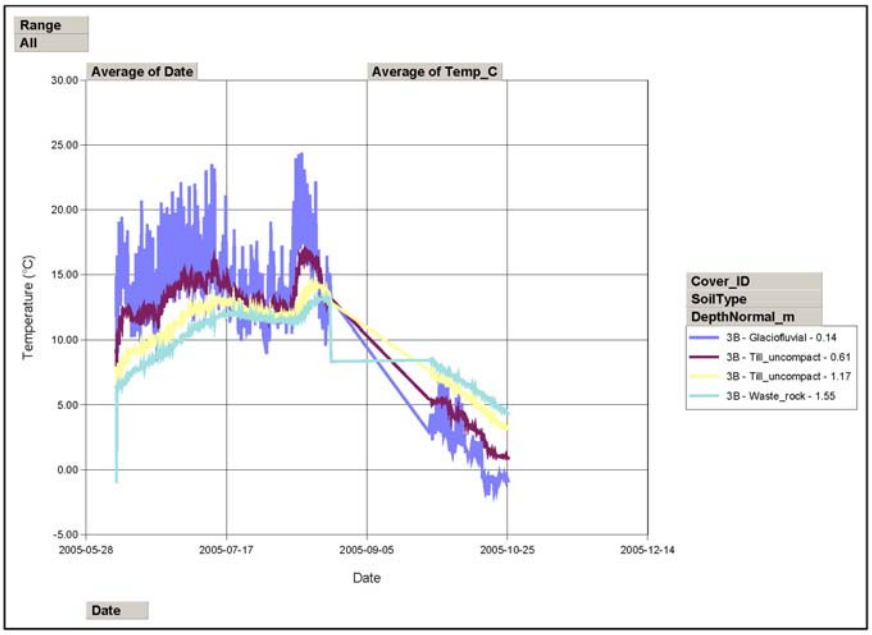

Figure 34: Soil temperature measurements (taken every six hours) in CT#3B recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

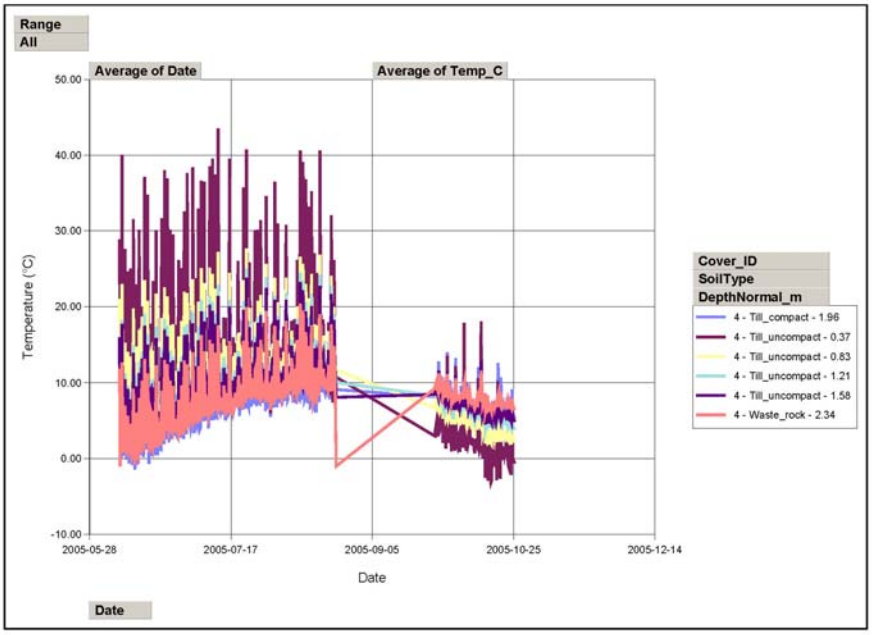

Figure 35: Soil temperature measurements (taken every six hours) in CT#4 recorded by CS229 sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

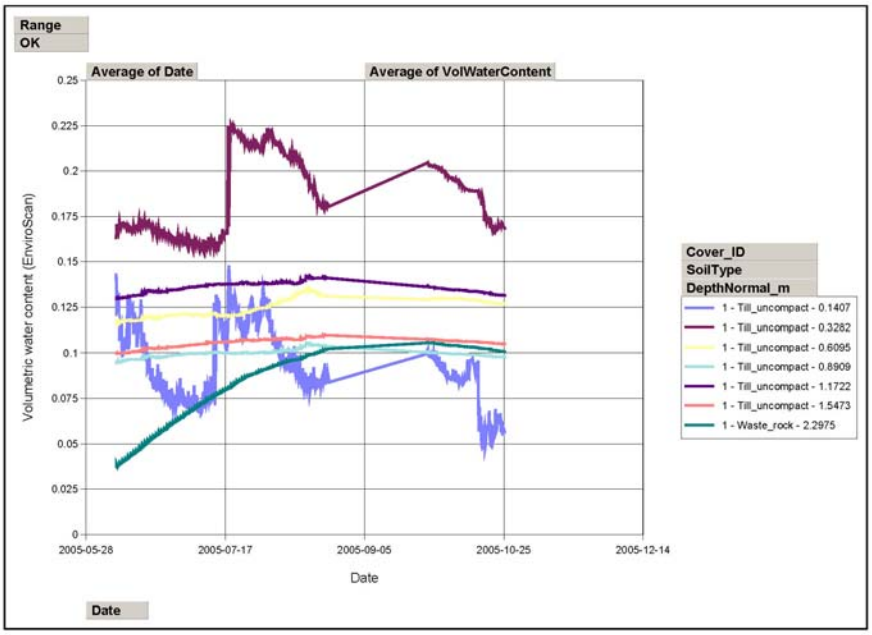

Figure 36: Volumetric moisture content measurements (taken every six hours) in CT#1 recorded by EnviroSCAN sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

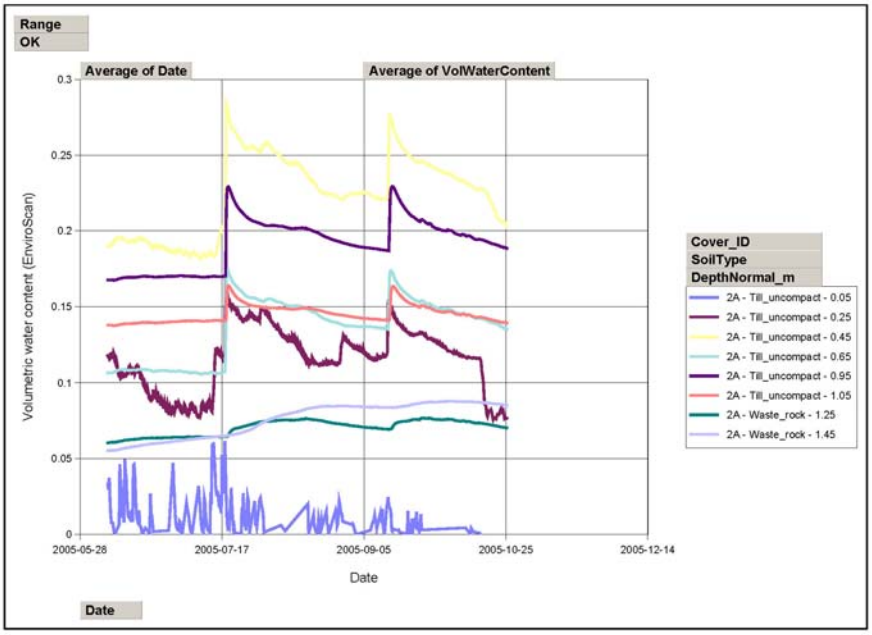

Figure 37: Volumetric moisture content measurements (taken every six hours) in CT#2A recorded by EnviroSCAN sensors connected to Campbell Scientific Data logger CR10X #1 (Array 130).

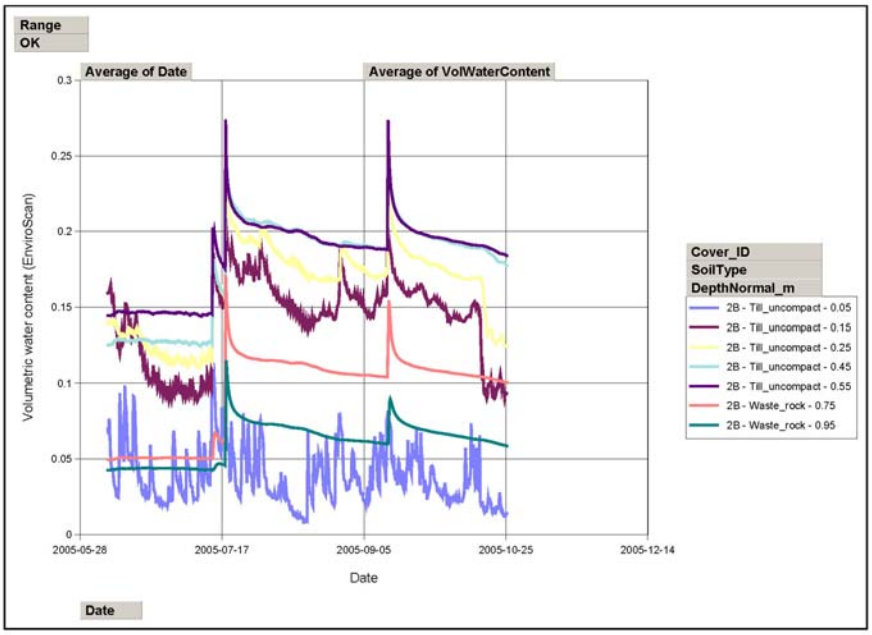

Figure 38: Volumetric moisture content measurements (taken every six hours) in CT#2B recorded by EnviroSCAN sensors connected to Campbell Scientific Data logger CR10X #1 (Array 130).

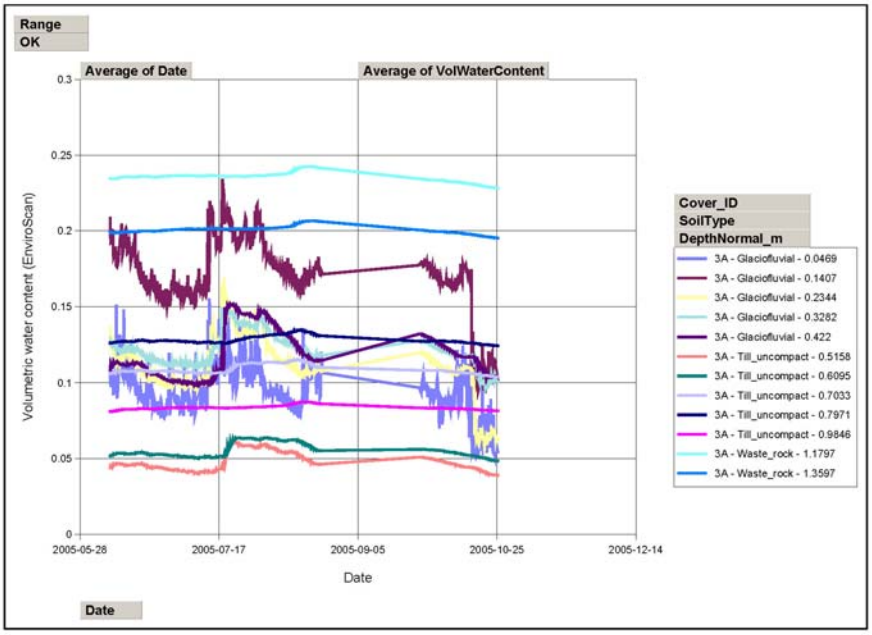

Figure 39: Volumetric moisture content measurements (taken every six hours) in CT#3A recorded by EnviroSCAN sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

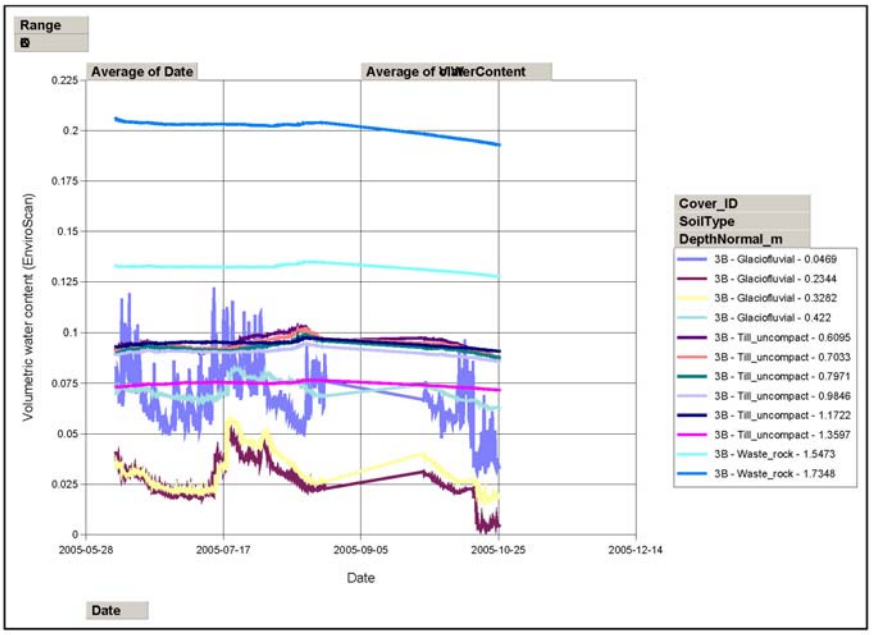

Figure 40: Volumetric moisture content measurements (taken every six hours) in CT#3B recorded by EnviroSCAN sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

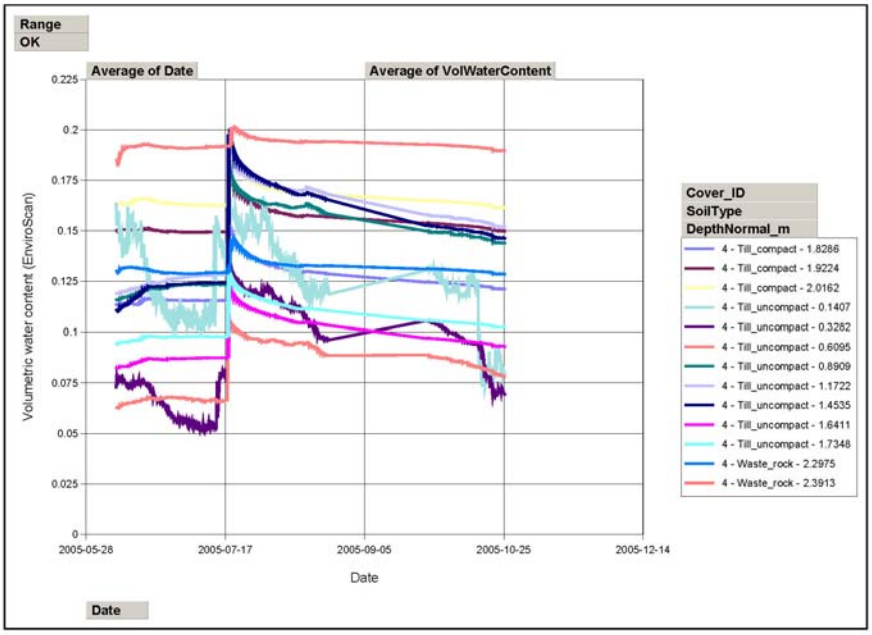

Figure 41: Volumetric moisture content measurements (taken every six hours) in CT#4 recorded by EnviroSCAN sensors connected to Campbell Scientific Data logger CR10X #2 (Array 168).

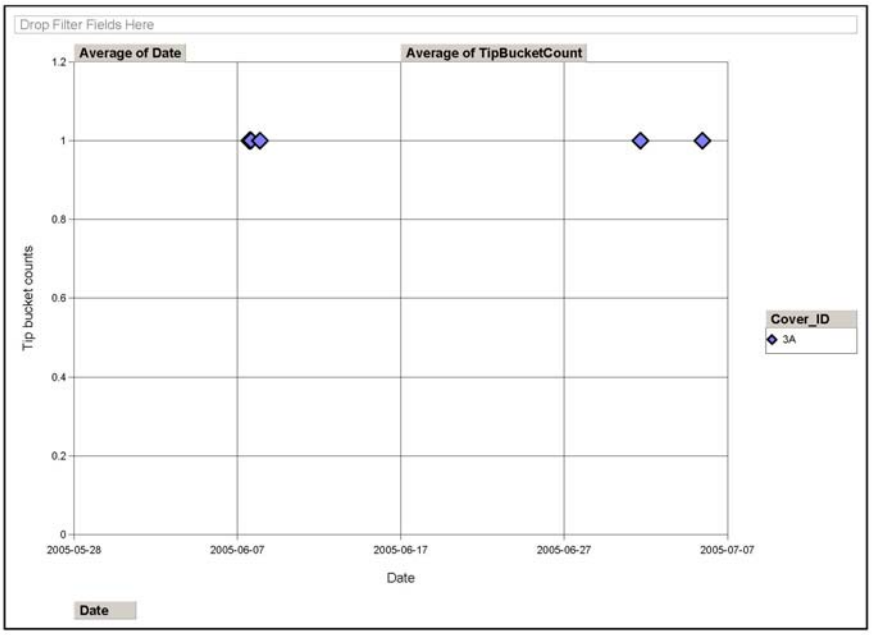

Figure 42: Interflow totals in CT#3A measured by a tipping bucket connected to Campbell Scientific Data logger CR10X #2 (Array 103).

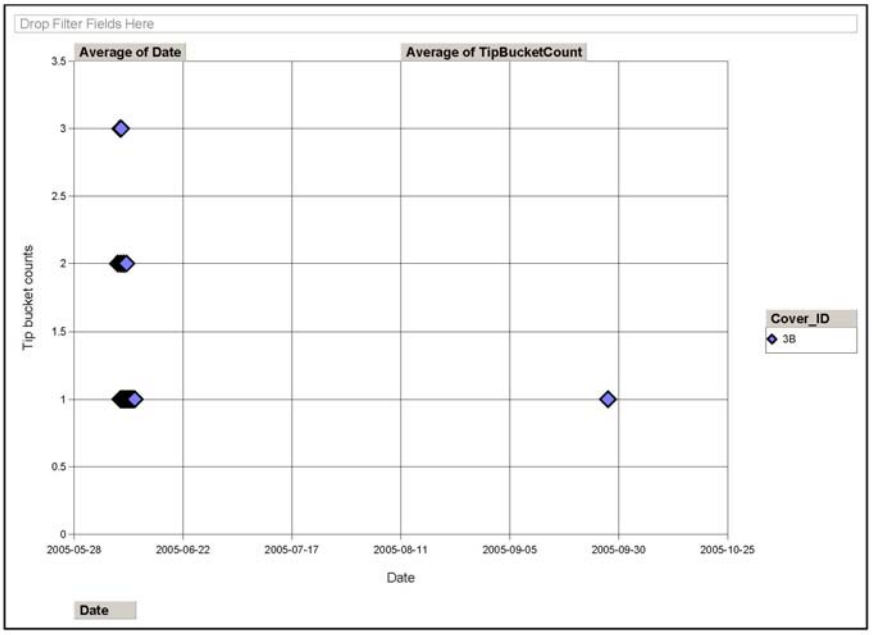

Figure 43: Interflow totals in CT#3B measured by a tipping bucket connected to Campbell Scientific Data logger CR10X #2 (Array 107).

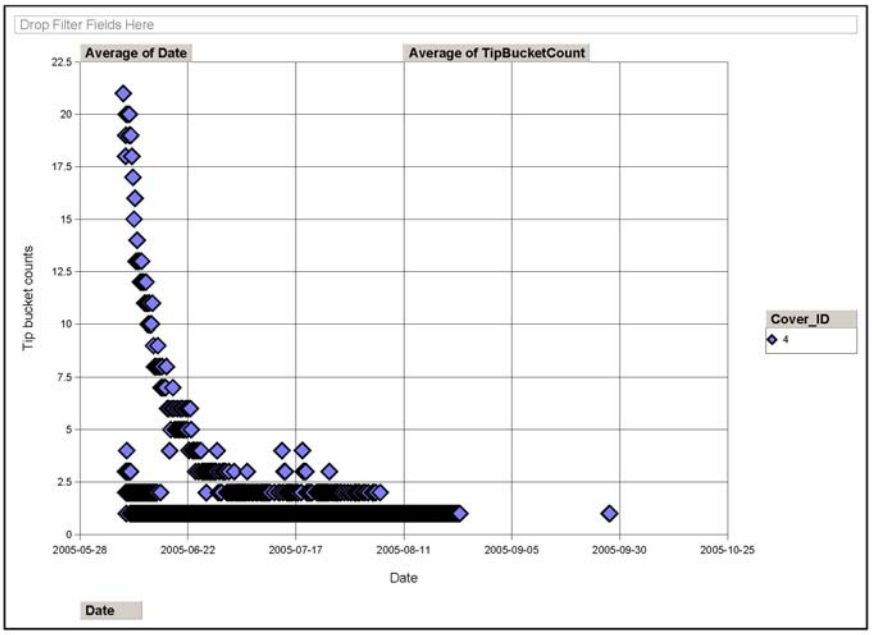

Figure 44: Interflow totals in CT#4 measured by a tipping bucket connected to Campbell Scientific Data logger CR10X #2 (Array 111).

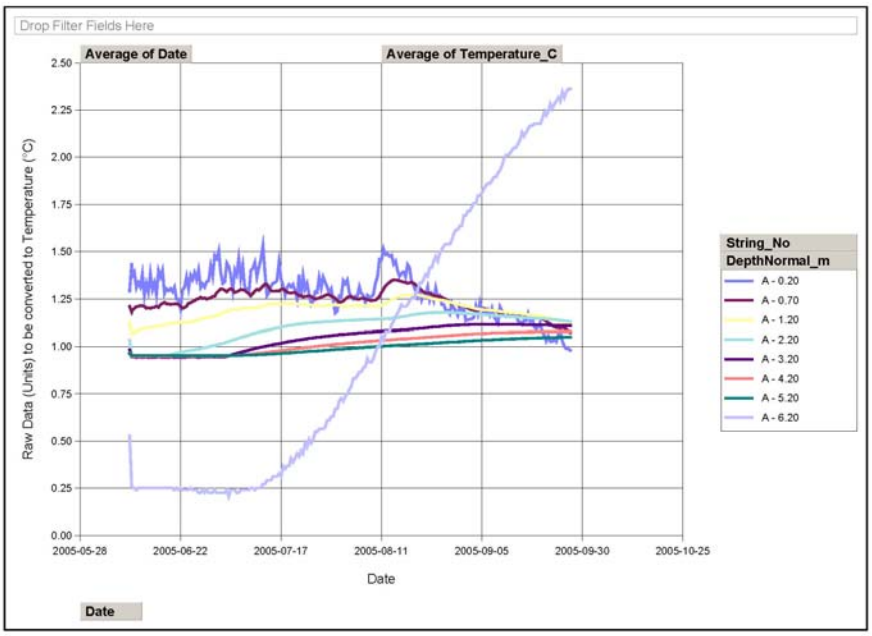

Figure 45: Soil temperature (measured every twelve hours) in Grum Overburden Dump by an M-squared thermistor string connected to a Lakewood Systems UL16 Data logger (Thermistor String A). Raw data displayed.

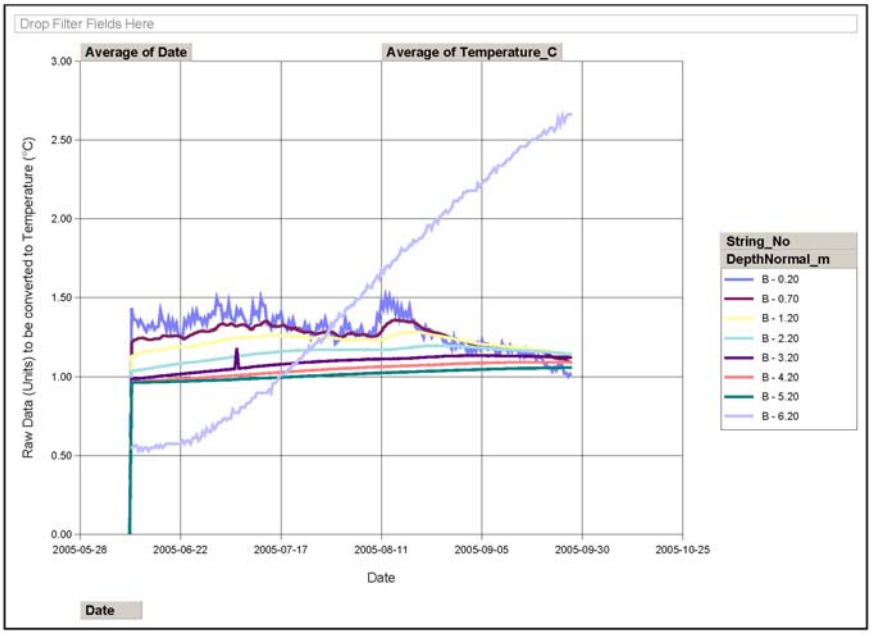

Figure 46: Soil temperature (measured every twelve hours) in Grum Overburden Dump by an M-squared thermistor string connected to a Lakewood Systems UL16 Data logger (Thermistor String B). Raw data displayed.

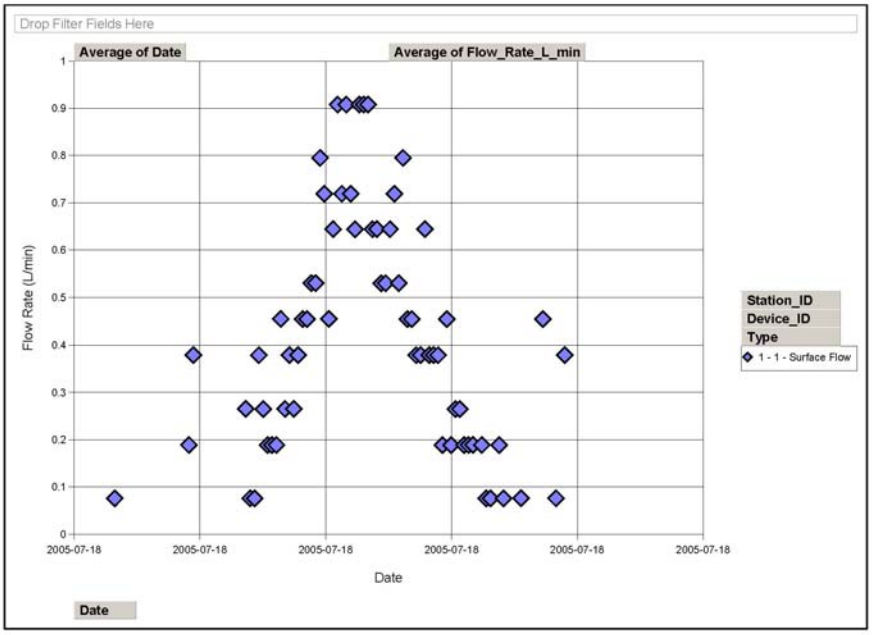

Figure 47: Surface runoff (measured every minute) on CT#1 by a Seametrics flowmeter connected to a Seametrics DL75 Data logger (File 0506051).

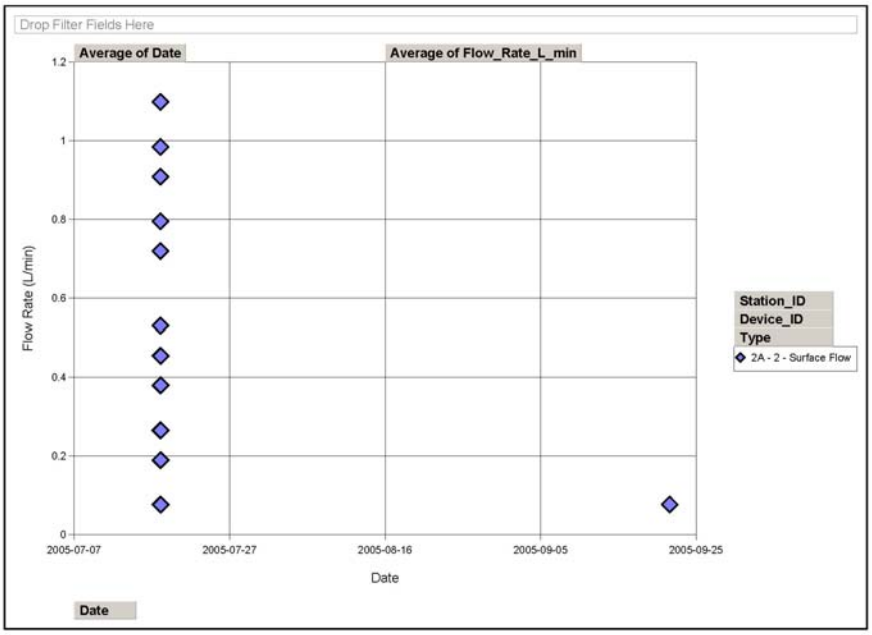

Figure 48: Surface runoff (measured every minute) on CT#2A by a Seametrics flowmeter connected to a Seametrics DL75 Data logger (File 0506052).

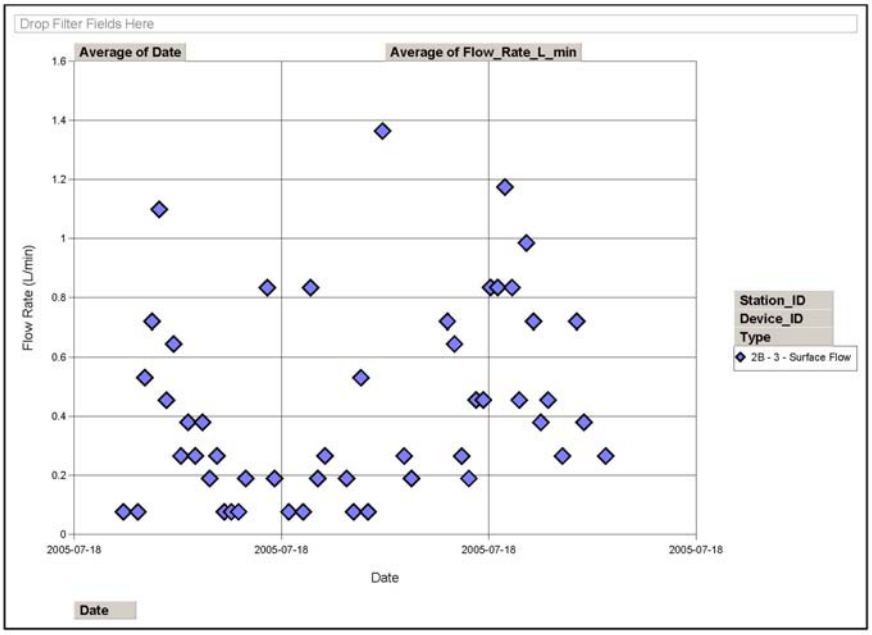

Figure 49: Surface runoff (measured every minute) on CT#2B by a Seametrics flowmeter connected to a Seametrics DL75 Data logger (File 0506053).

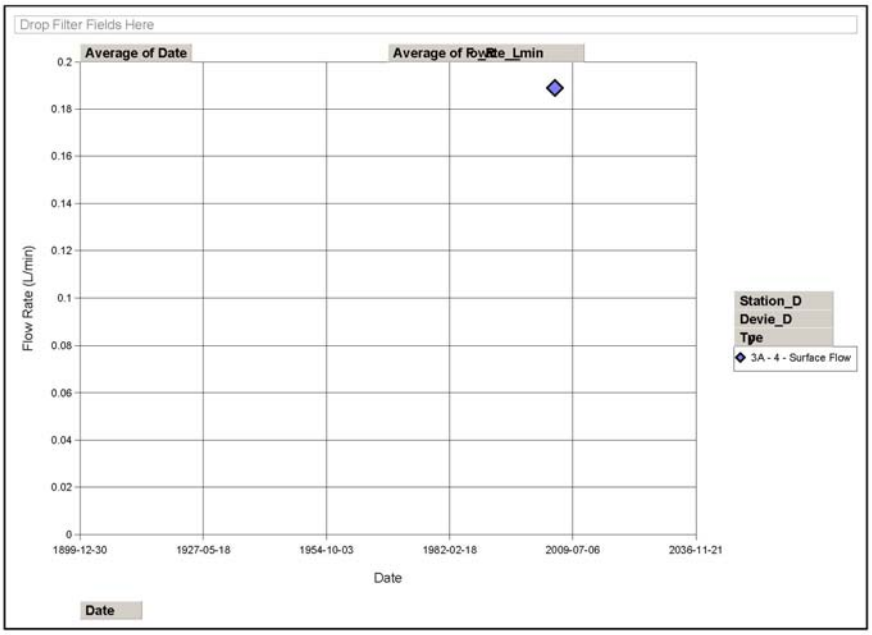

Figure 50: Surface runoff (measured every minute) on CT#3A by a Seametrics flowmeter connected to a Seametrics DL75 Data logger (File 0506054).

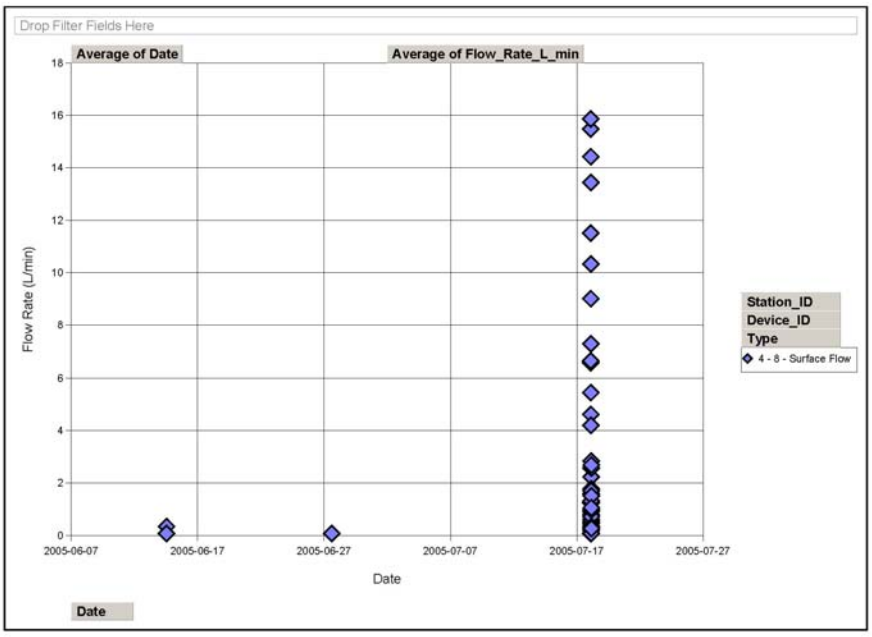

Figure 51: Surface runoff (measured every minute) on CT#4 by a Seametrics flowmeter connected to a Seametrics DL75 Data logger (File 0506058).

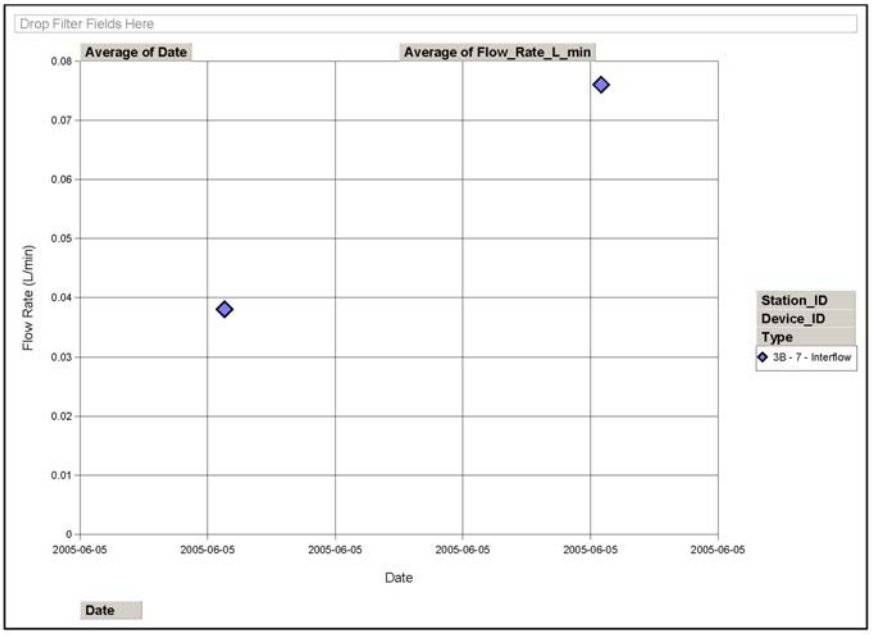

Figure 52: Interflow (measured every minute) in CT#3B by a Seametrics flowmeter connected to a Seametrics DL75 Data logger (File 0506057).

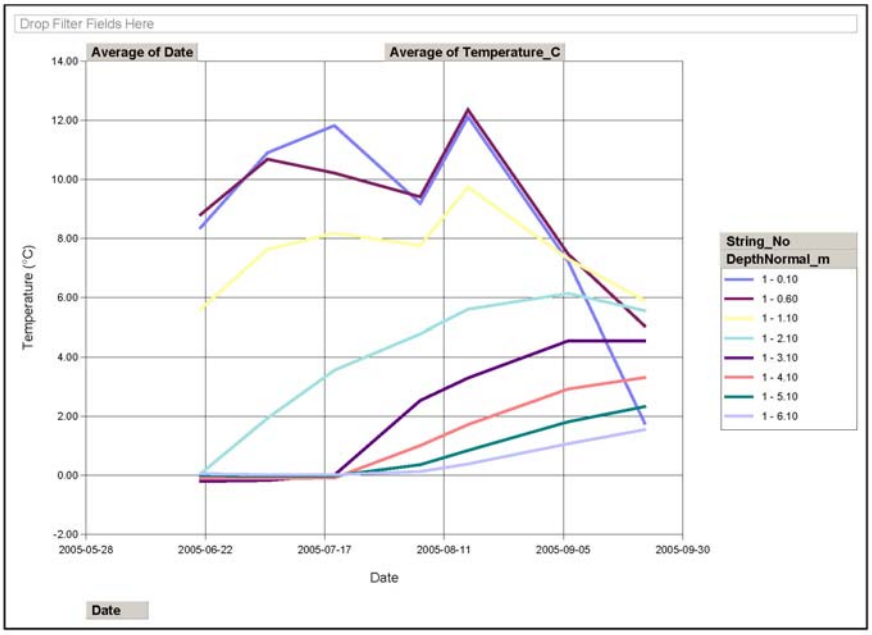

Figure 53: Monthly soil temperature measurements in Grum Overburden Dump by an M-Squared thermistor string measured manually (Thermistor String 1). Raw data expressed as resistances.

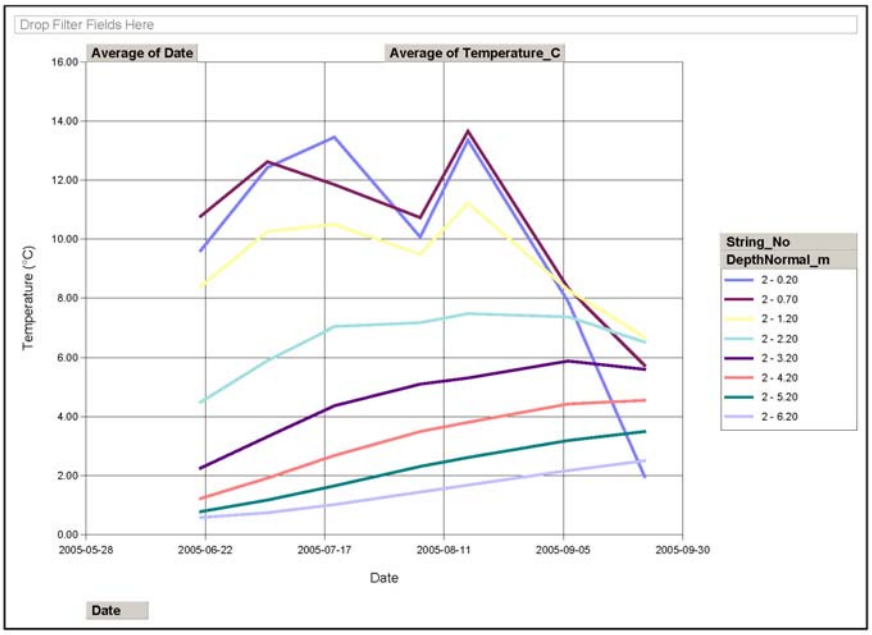

Figure 54: Monthly soil temperature measurements in Grum Overburden Dump by an M-Squared thermistor string measured manually (Thermistor String 2). Raw data expressed as resistances.

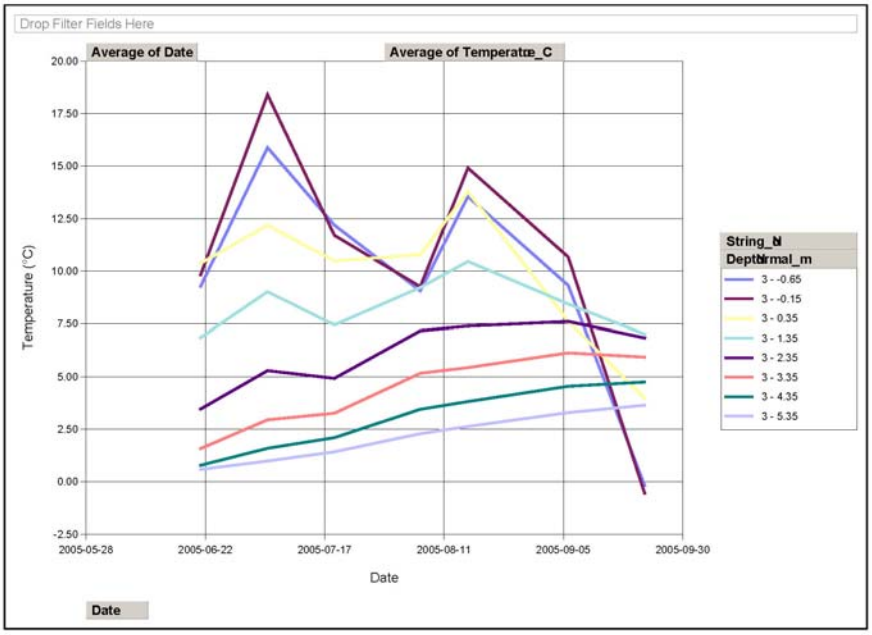

Figure 55: Monthly soil temperature measurements in Grum Overburden Dump by an M-Squared thermistor string measured manually (Thermistor String 3). Raw data expressed as resistances.

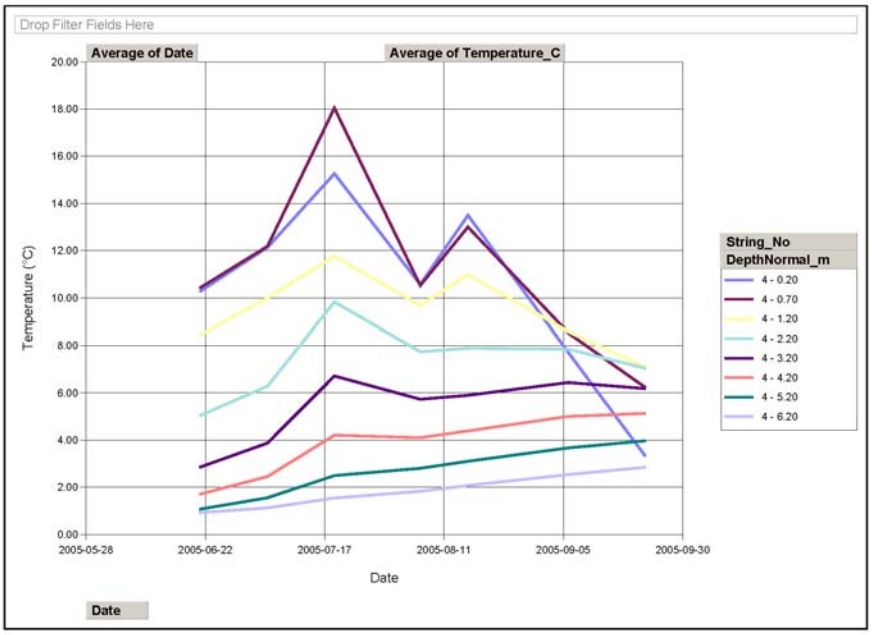

Figure 56: Monthly soil temperature measurements in Grum Overburden Dump by an M-Squared thermistor string measured manually (Thermistor String 4). Raw data expressed as resistances.

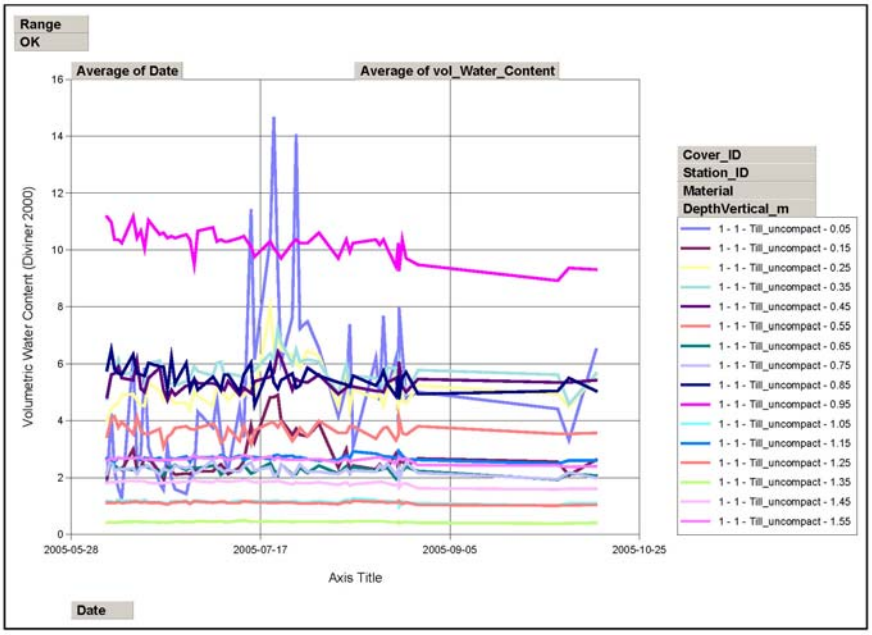

Figure 57: Daily volumetric moisture content in CT#1 (Station #1) measured manually by a Sentek Diviner 2000.

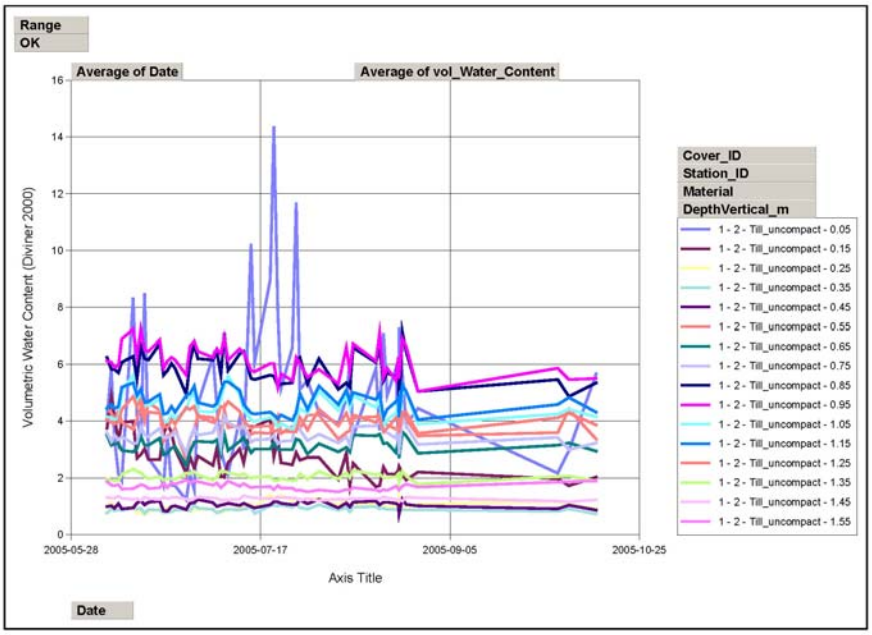

Figure 58: Daily volumetric moisture content in CT#1 (Station #2) measured manually by a Sentek Diviner 2000.

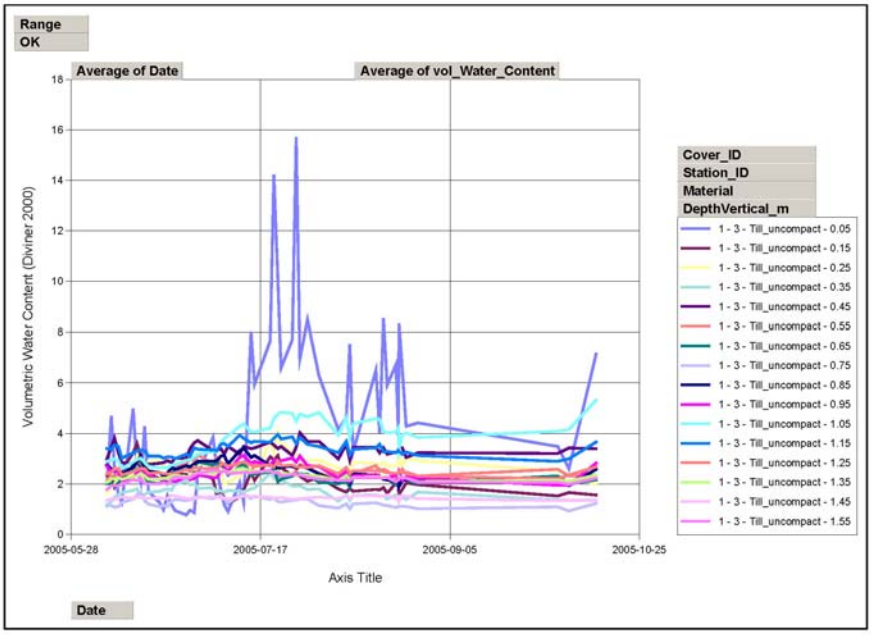

Figure 59: Daily volumetric moisture content in CT#1 (Station #3) measured manually by a Sentek Diviner 2000.

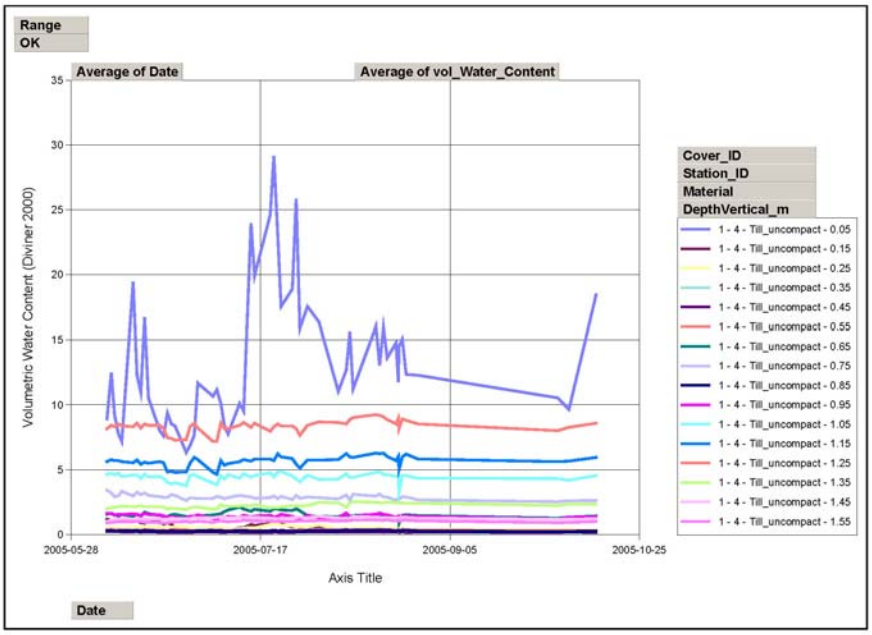

Figure 60: Daily volumetric moisture content in CT#1 (Station #4) measured manually by a Sentek Diviner 2000.

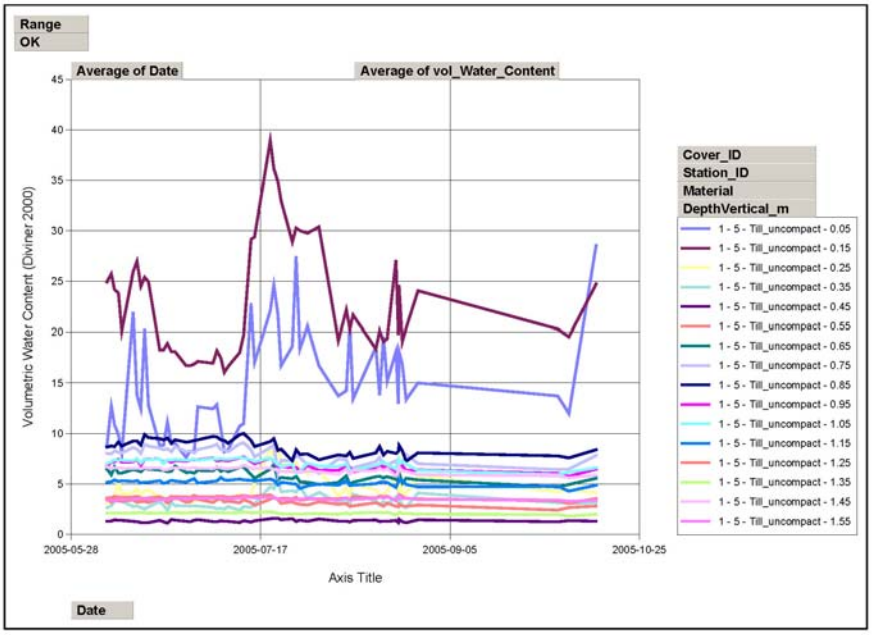

Figure 61: Daily volumetric moisture content in CT#1 (Station #5) measured manually by a Sentek Diviner 2000.

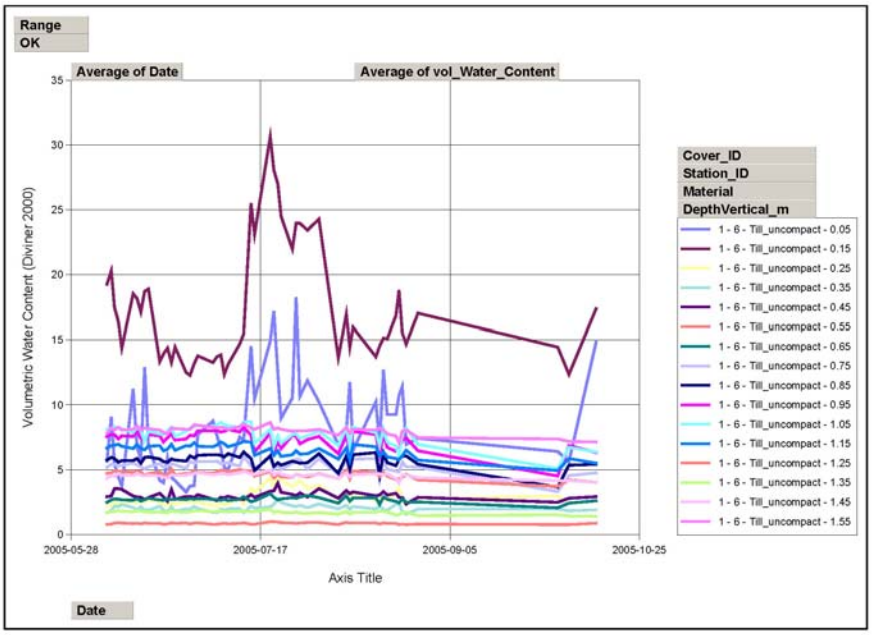

Figure 62: Daily volumetric moisture content in CT#1 (Station #6) measured manually by a Sentek Diviner 2000.

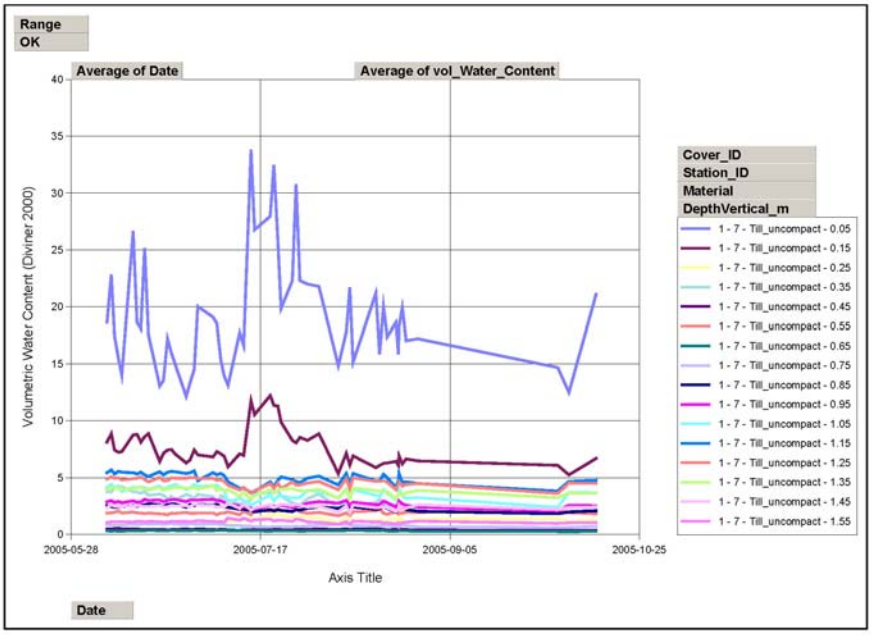

Figure 63: Daily volumetric moisture content in CT#1 (Station #7) measured manually by a Sentek Diviner 2000.

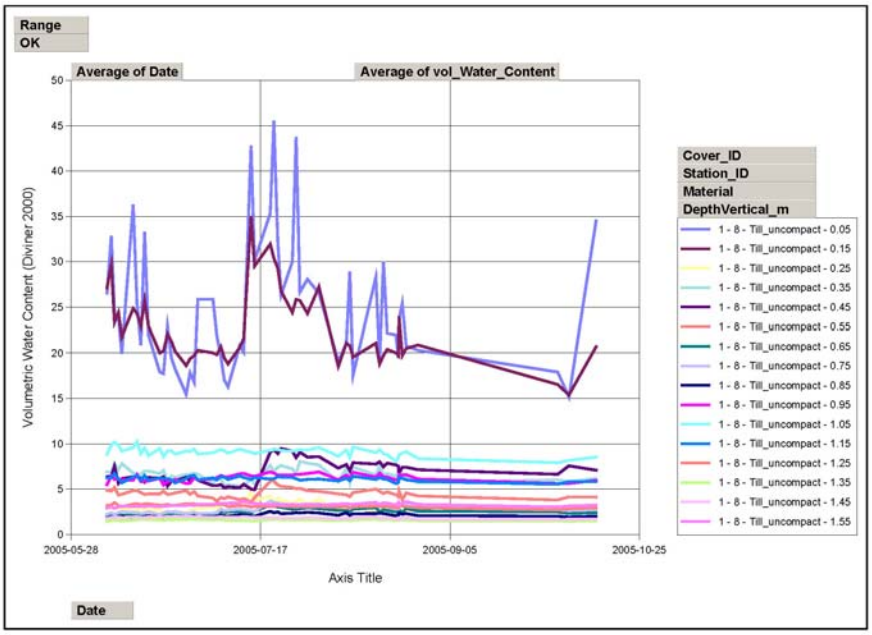

Figure 64: Daily volumetric moisture content in CT#1 (Station #8) measured manually by a Sentek Diviner 2000.

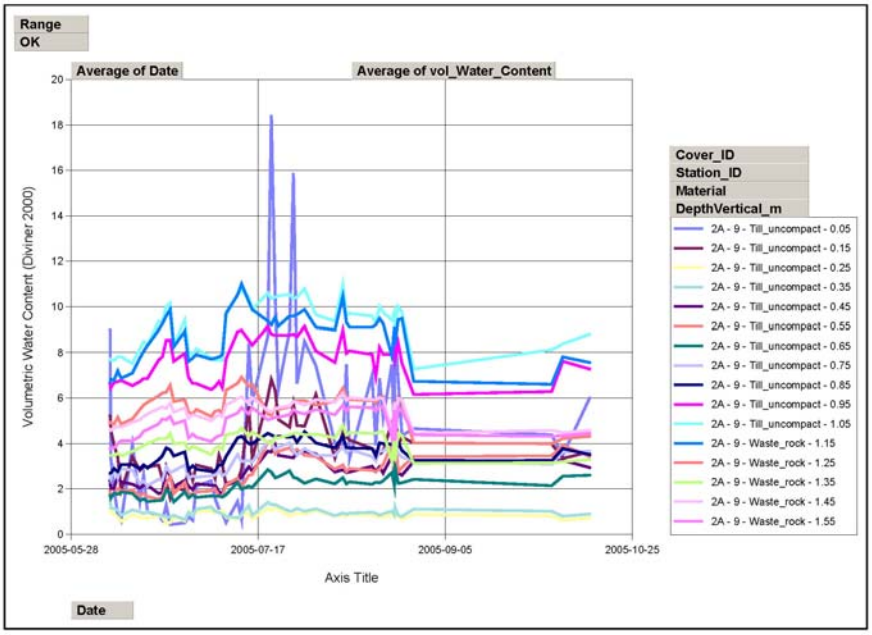

Figure 65: Daily volumetric moisture content in CT#2A (Station #9) measured manually by a Sentek Diviner 2000.

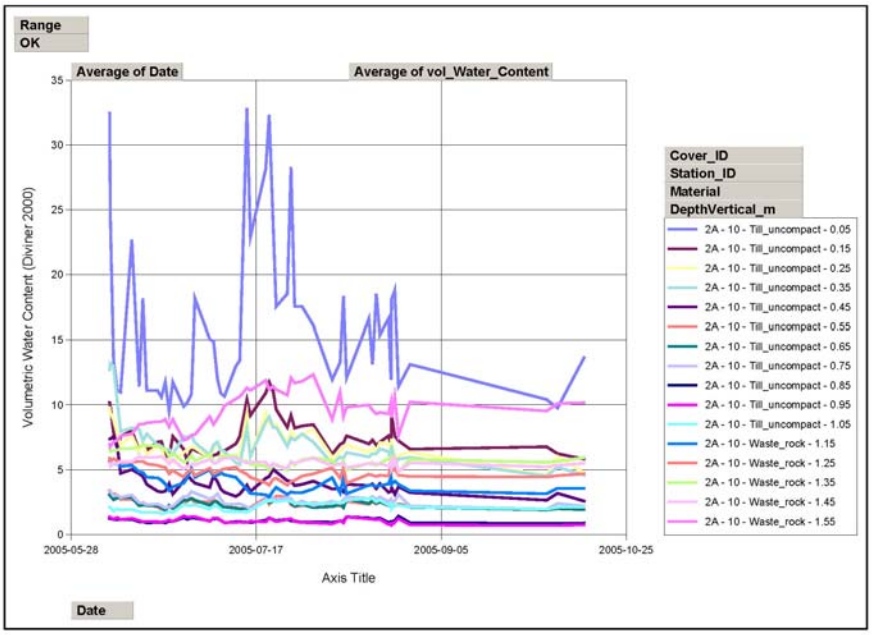

Figure 66: Daily volumetric moisture content in CT#2A (Station #10) measured manually by a Sentek Diviner 2000.

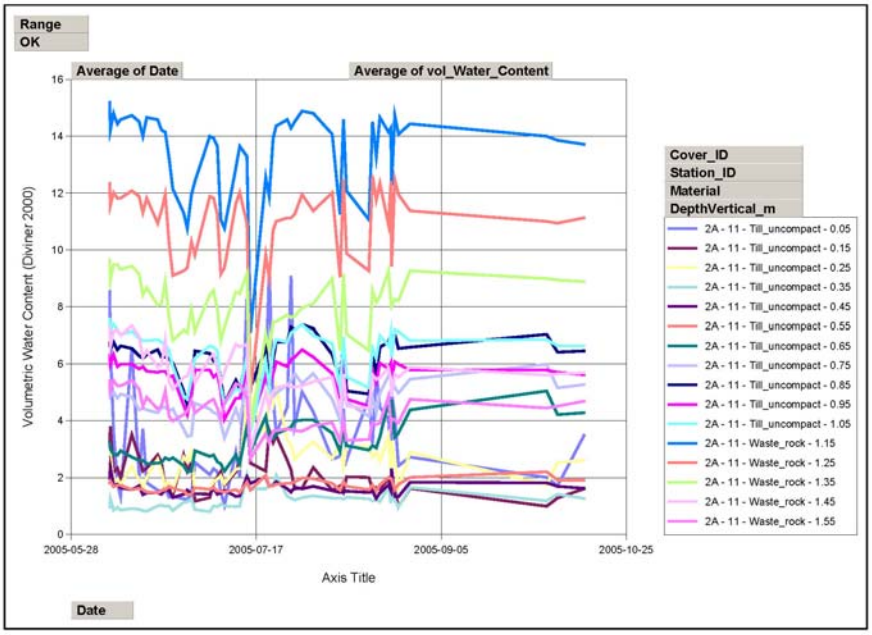

Figure 67: Daily volumetric moisture content in CT#2A (Station #11) measured manually by a Sentek Diviner 2000.

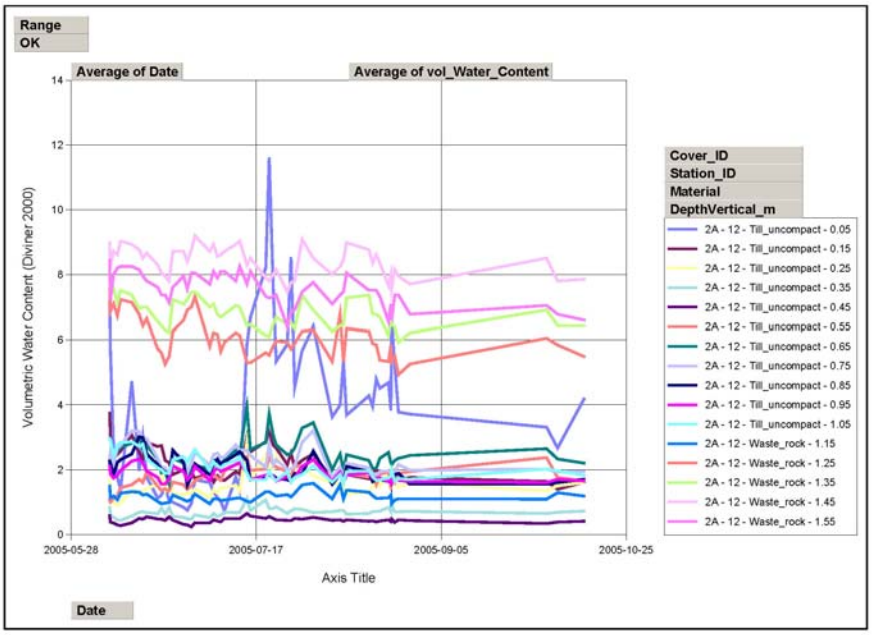

Figure 68: Daily volumetric moisture content in CT#2A (Station #12) measured manually by a Sentek Diviner 2000.

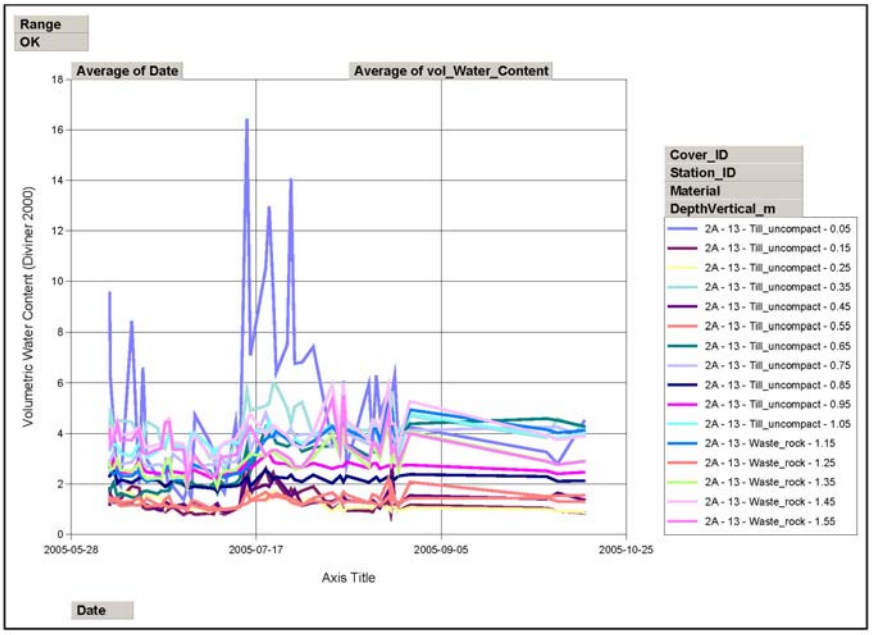

Figure 69: Daily volumetric moisture content in CT#2A (Station #13) measured manually by a Sentek Diviner 2000.

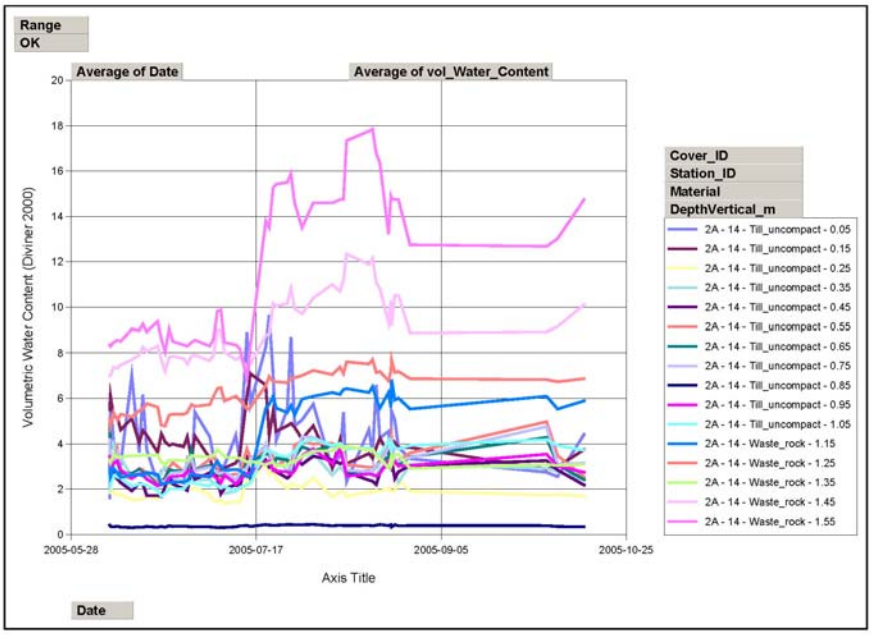

Figure 70: Daily volumetric moisture content in CT#2A (Station #14) measured manually by a Sentek Diviner 2000.

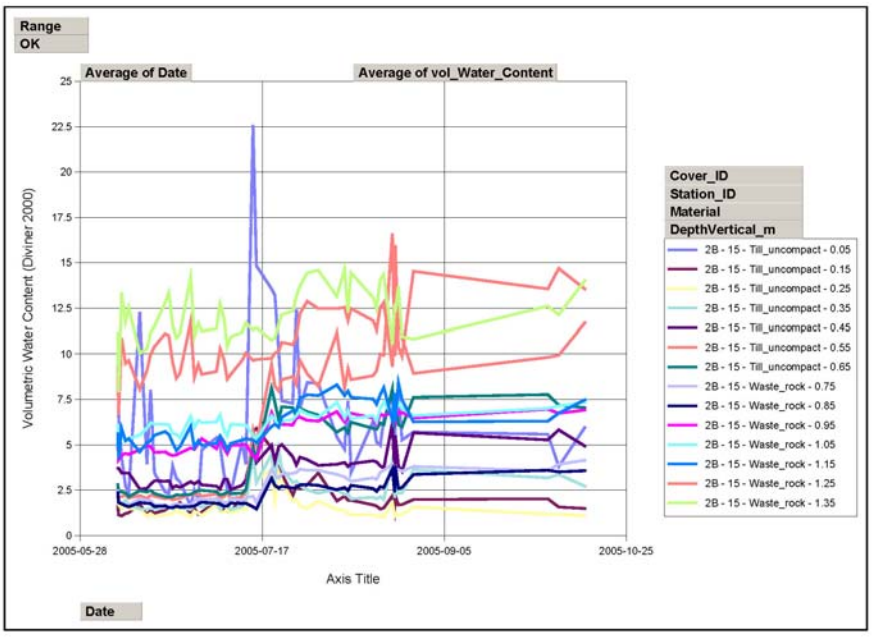

Figure 71: Daily volumetric moisture content in CT#2B (Station #15) measured manually by a Sentek Diviner 2000.

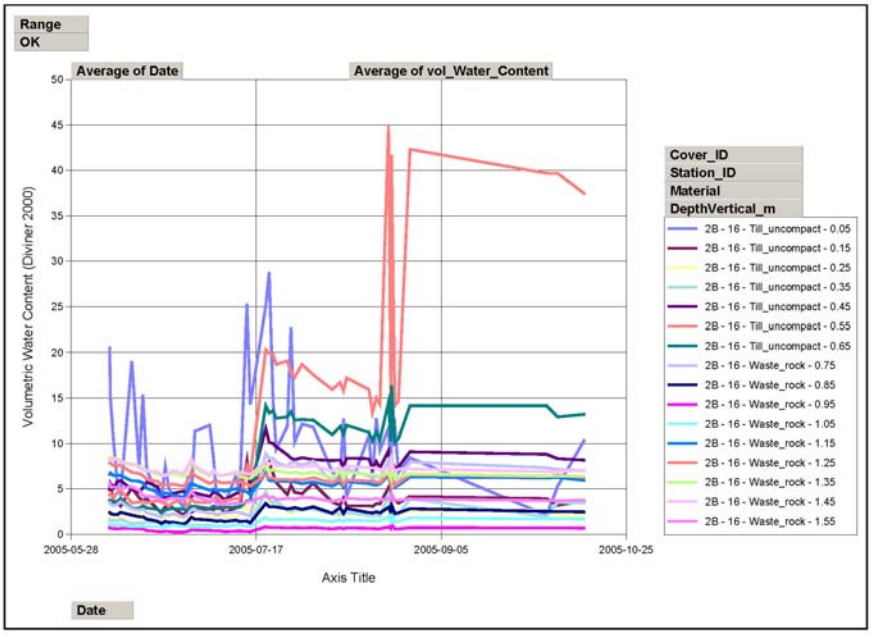

Figure 72: Daily volumetric moisture content in CT#2B (Station #16) measured manually by a Sentek Diviner 2000.

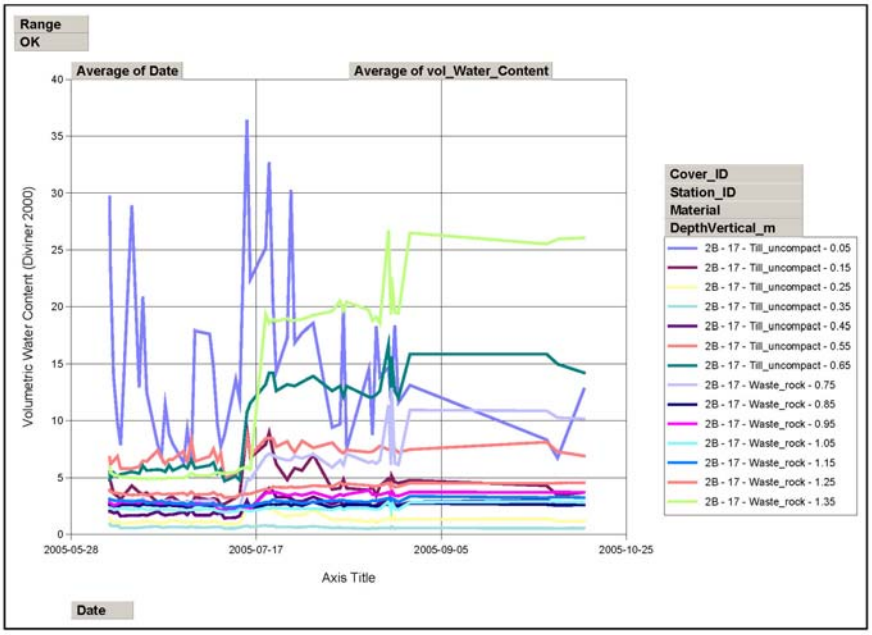

Figure 73: Daily volumetric moisture content in CT#2B (Station #17) measured manually by a Sentek Diviner 2000.

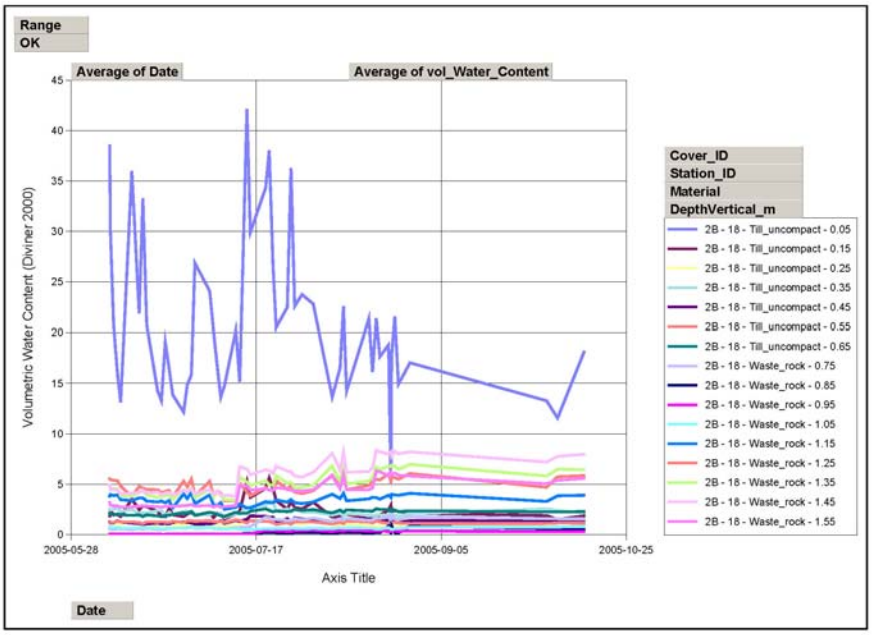

Figure 74: Daily volumetric moisture content in CT#2B (Station #18) measured manually by a Sentek Diviner 2000.

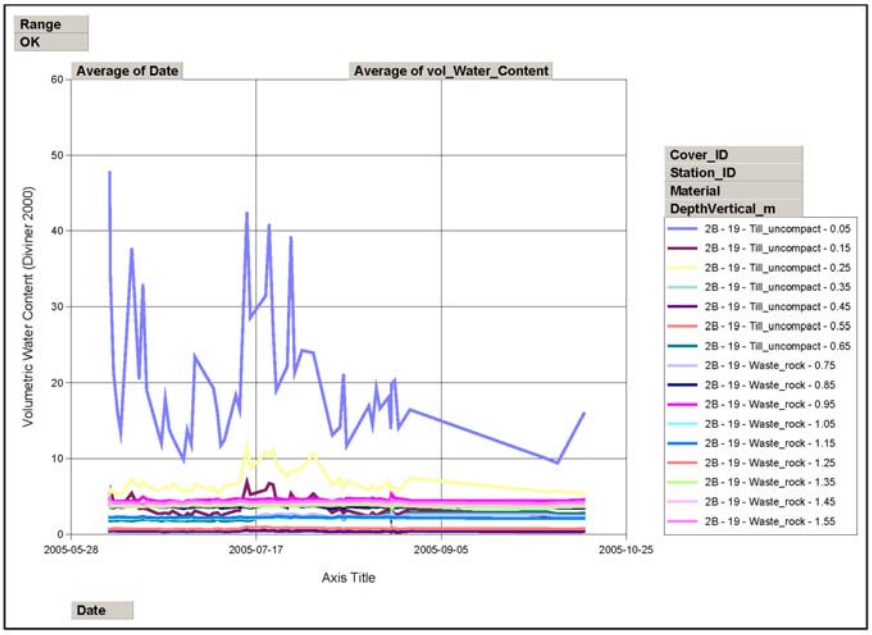

Figure 75: Daily volumetric moisture content in CT#2B (Station #19) measured manually by a Sentek Diviner 2000.

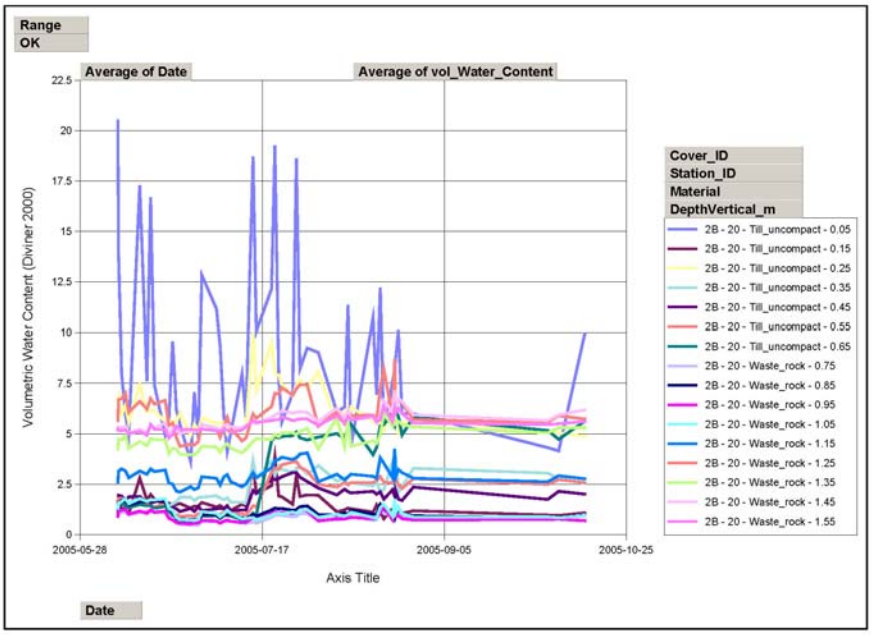

Figure 76: Daily volumetric moisture content in CT#2B (Station #20) measured manually by a Sentek Diviner 2000.

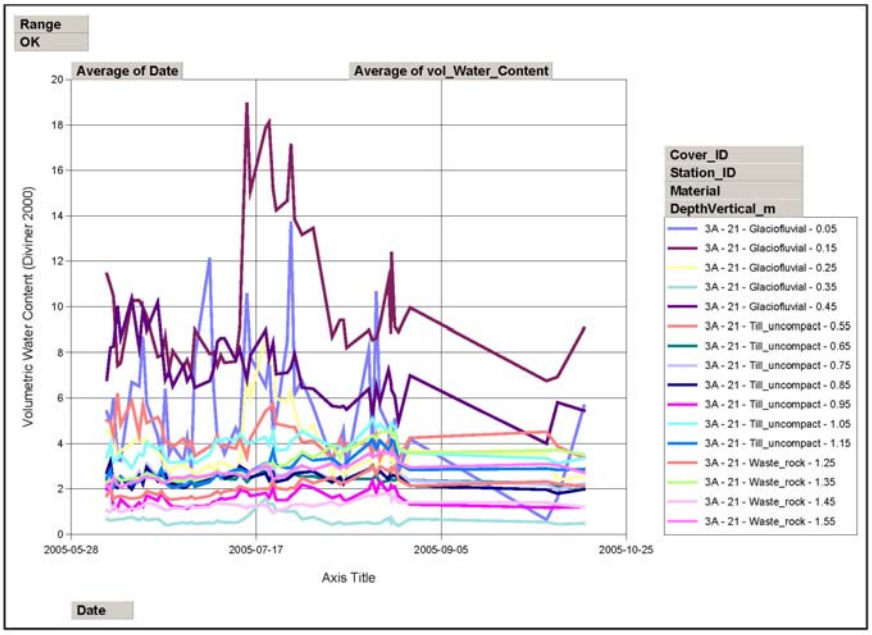

Figure 77: Daily volumetric moisture content in CT#3A (Station #21) measured manually by a Sentek Diviner 2000.

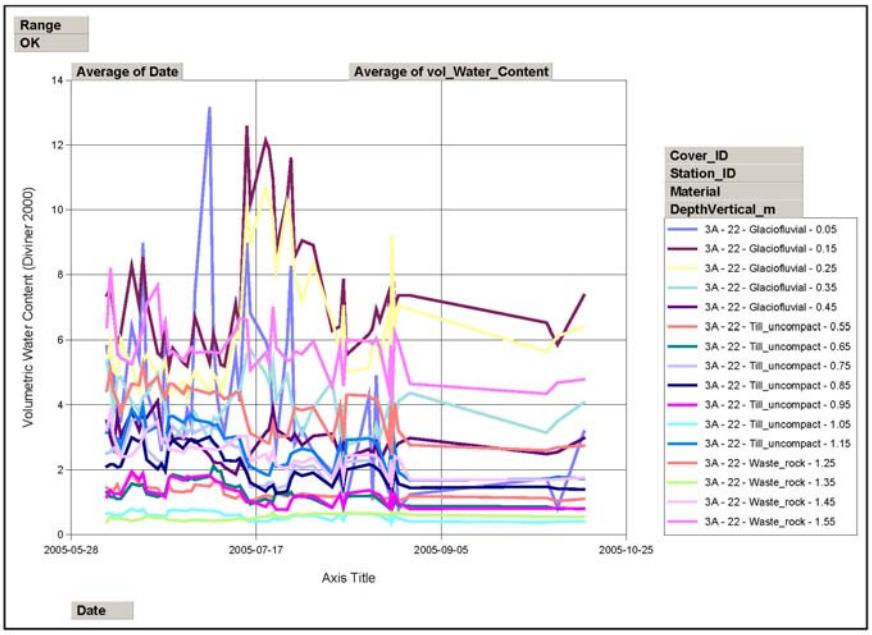

Figure 78: Daily volumetric moisture content in CT#3A (Station #22) measured manually by a Sentek Diviner 2000.

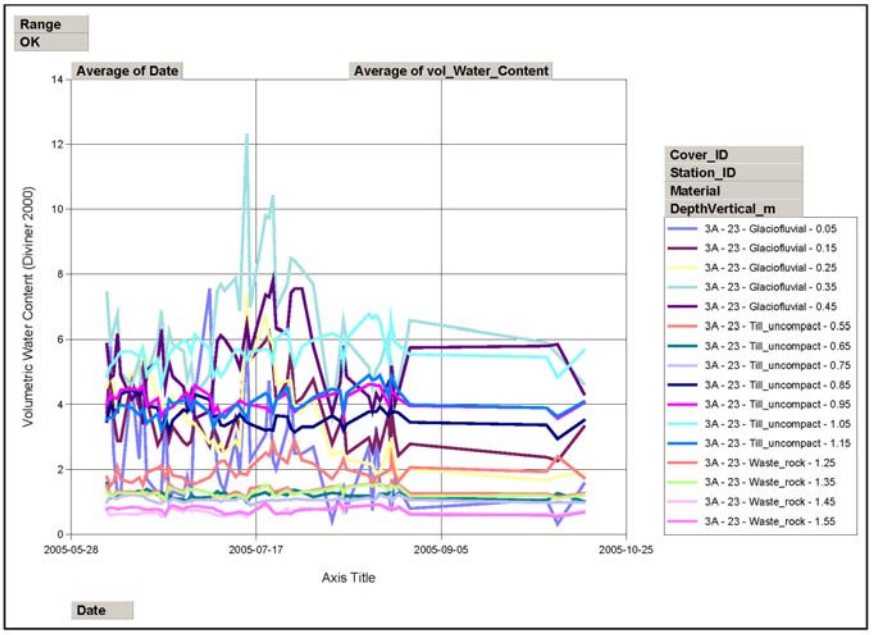

Figure 79: Daily volumetric moisture content in CT#3A (Station #23) measured manually by a Sentek Diviner 2000.

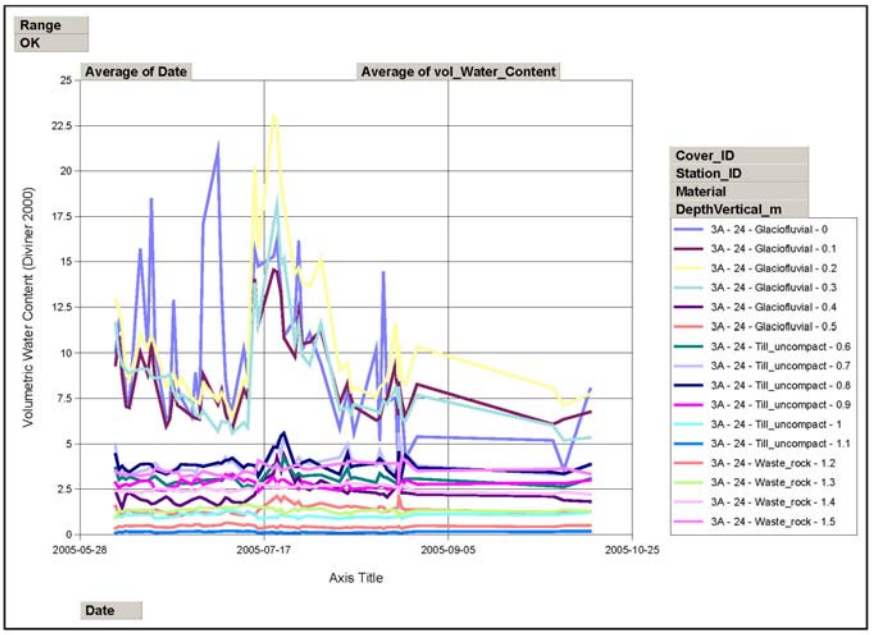

Figure 80: Daily volumetric moisture content in CT#3A (Station #24) measured manually by a Sentek Diviner 2000.

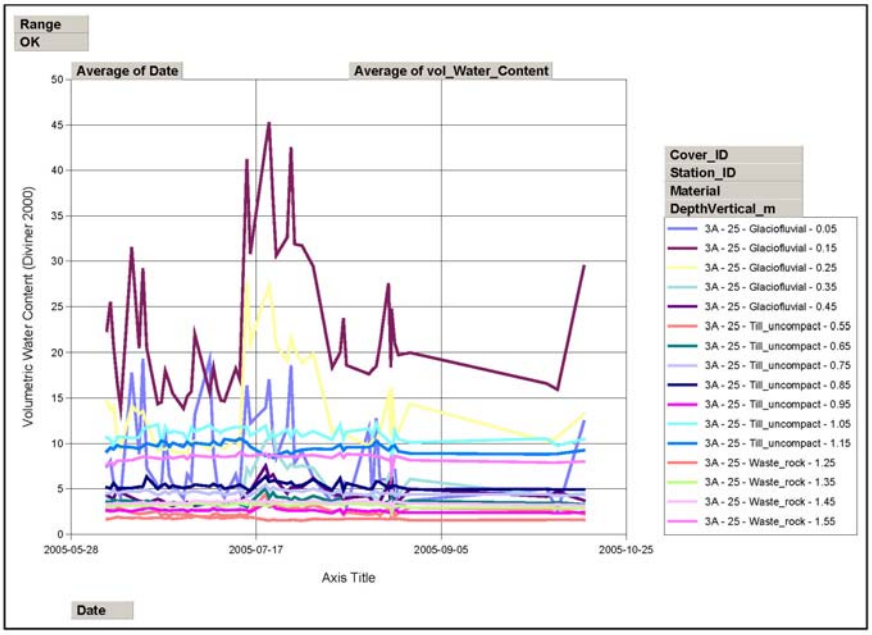

Figure 81: Daily volumetric moisture content in CT#3A (Station #25) measured manually by a Sentek Diviner 2000.

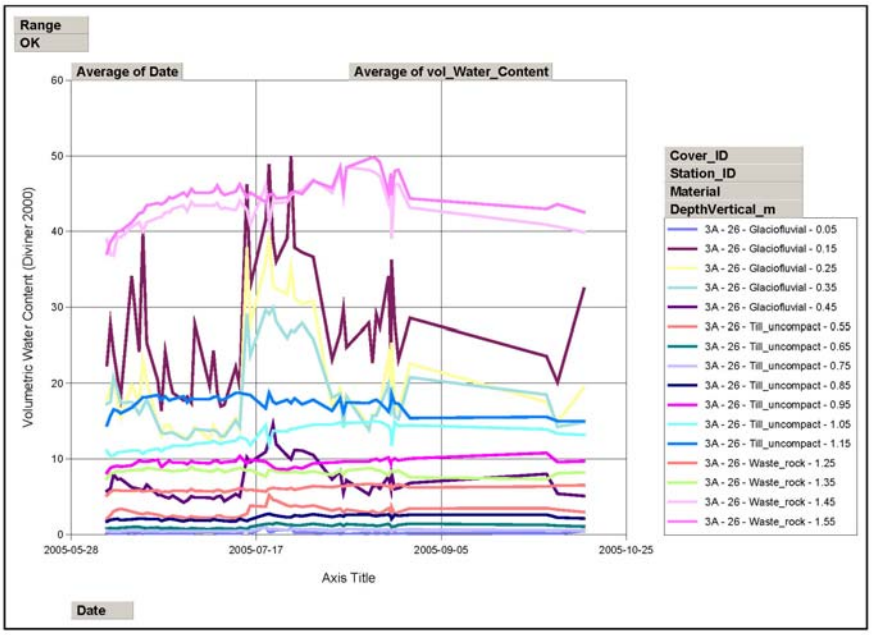

Figure 82: Daily volumetric moisture content in CT#3A (Station #26) measured manually by a Sentek Diviner 2000.

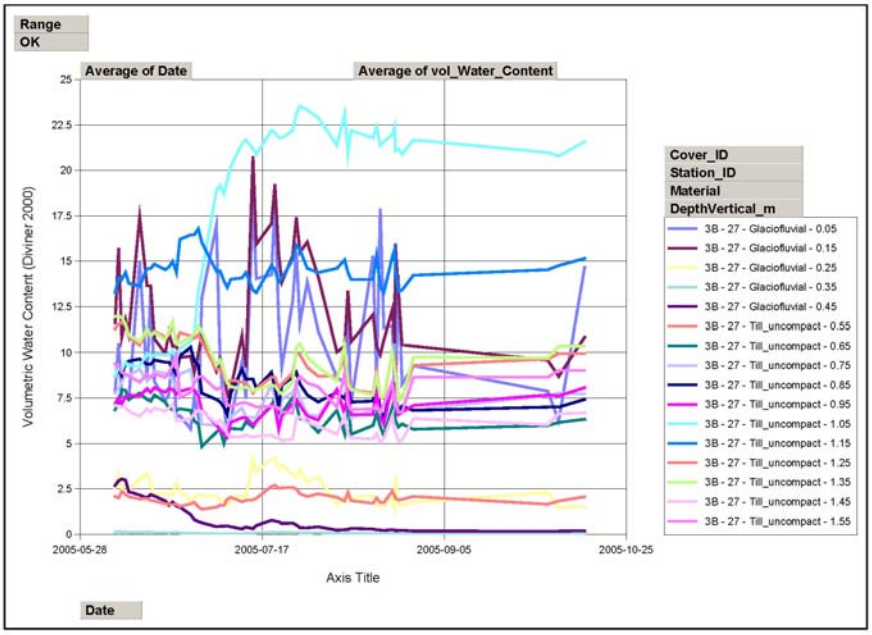

Figure 83: Daily volumetric moisture content in CT#3B (Station #27) measured manually by a Sentek Diviner 2000.

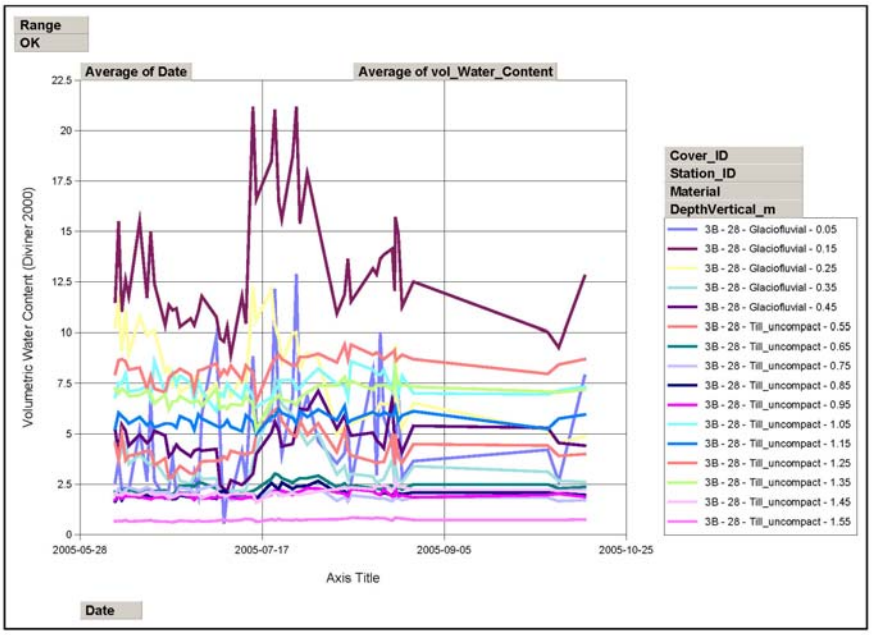

Figure 84: Daily volumetric moisture content in CT#3B (Station #28) measured manually by a Sentek Diviner 2000.

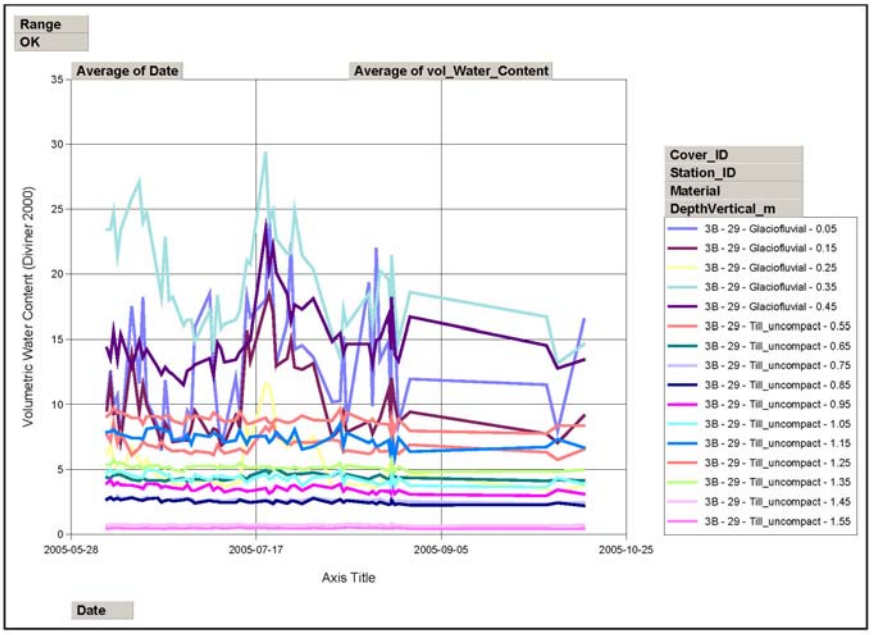

Figure 85: Daily volumetric moisture content in CT#3B (Station #29) measured manually by a Sentek Diviner 2000.

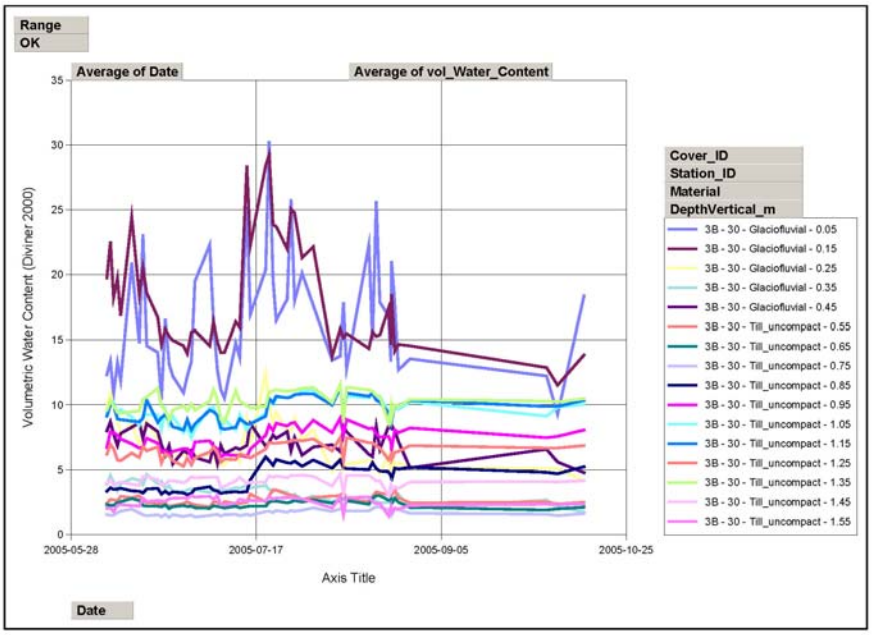

Figure 86: Daily volumetric moisture content in CT#3B (Station #30) measured manually by a Sentek Diviner 2000.

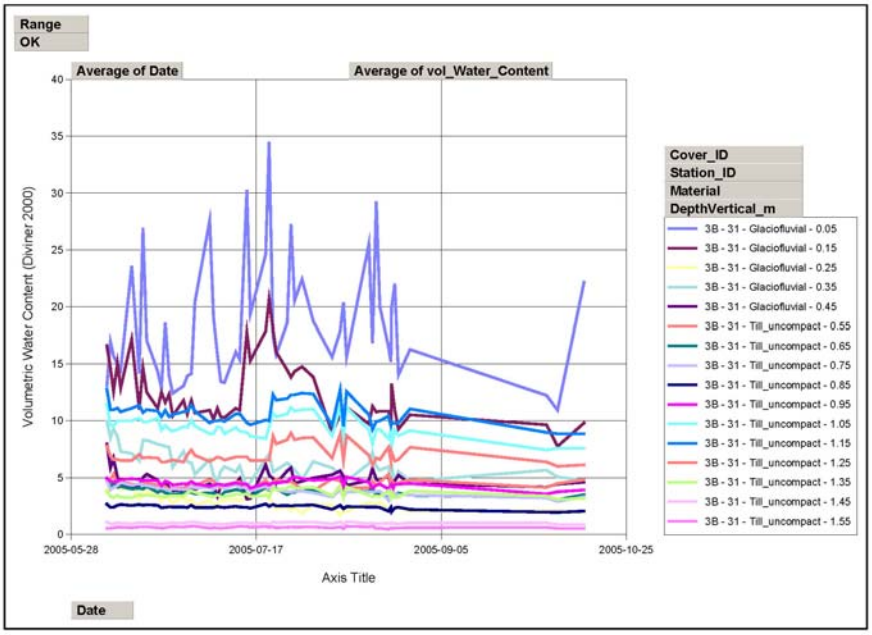

Figure 87: Daily volumetric moisture content in CT#3B (Station #31) measured manually by a Sentek Diviner 2000.

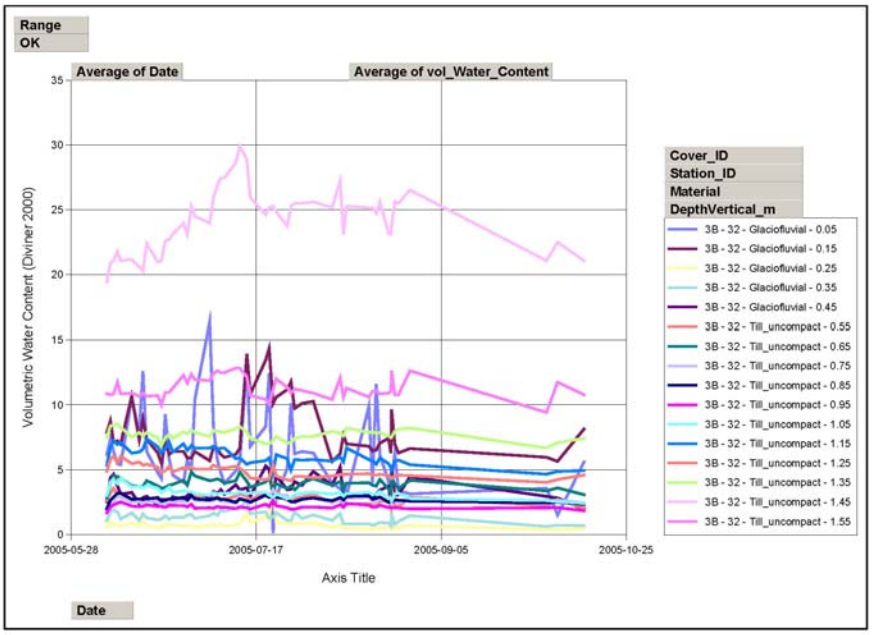

Figure 88: Daily volumetric moisture content in CT#3B (Station #32) measured manually by a Sentek Diviner 2000.

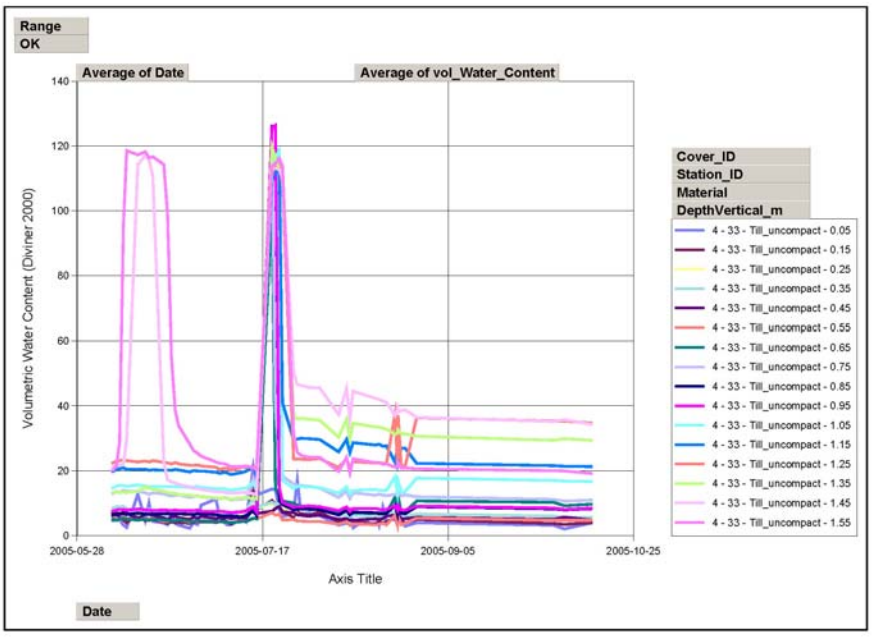

Figure 89: Daily volumetric moisture content in CT#4 (Station #33) measured manually by a Sentek Diviner 2000.

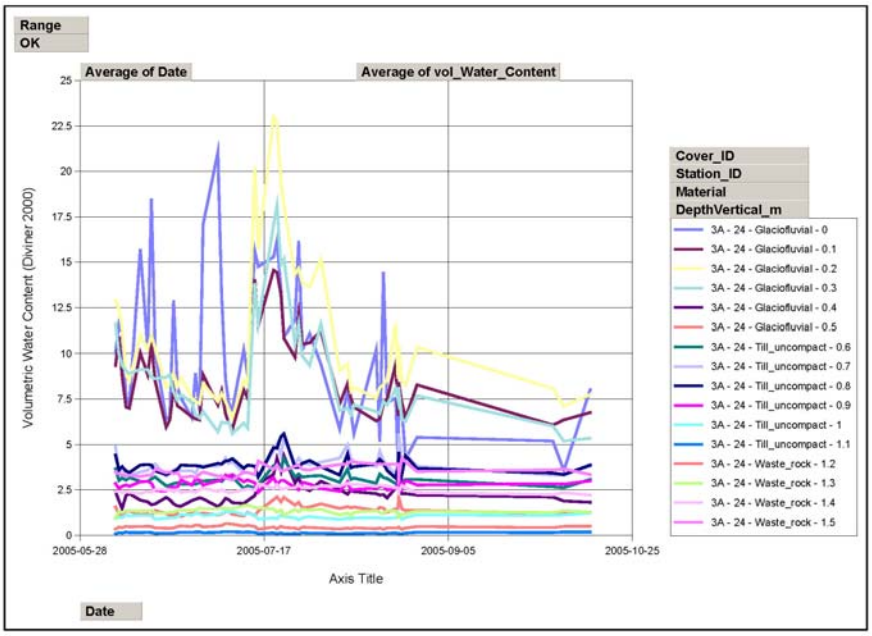

Figure 90: Daily volumetric moisture content in CT#4 (Station #34) measured manually by a Sentek Diviner 2000.

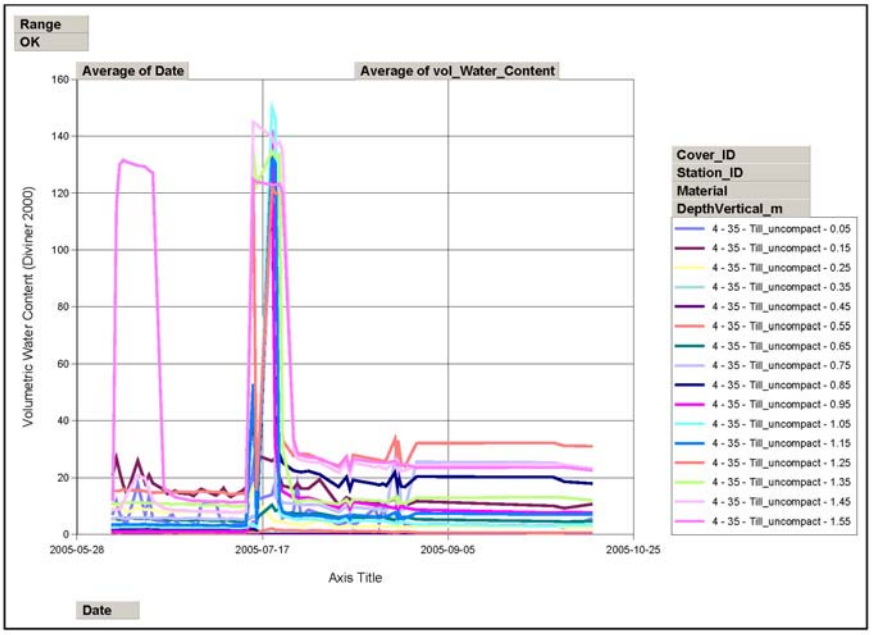

Figure 91: Daily volumetric moisture content in CT#4 (Station #35) measured manually by a Sentek Diviner 2000.

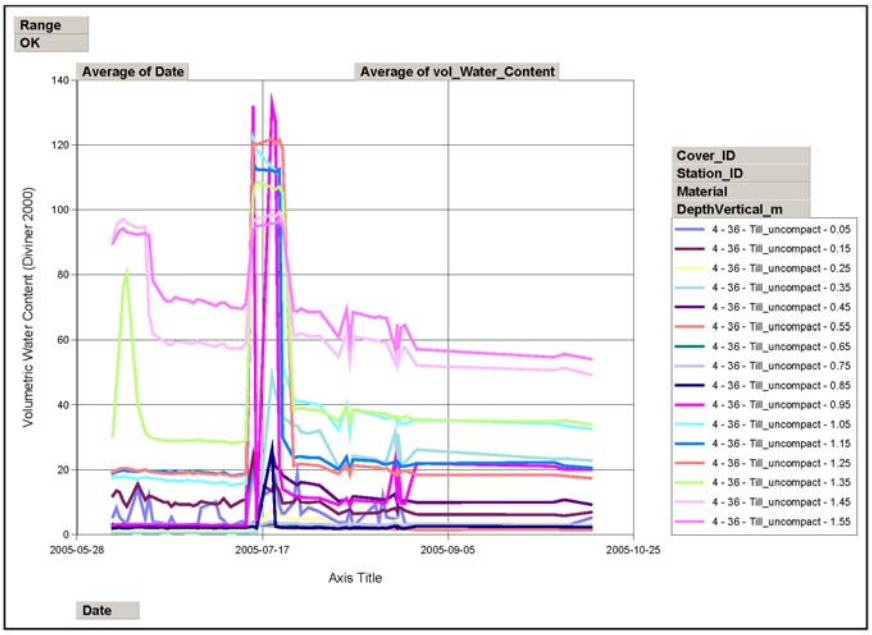

Figure 92: Daily volumetric moisture content in CT#4 (Station #36) measured manually by a Sentek Diviner 2000.

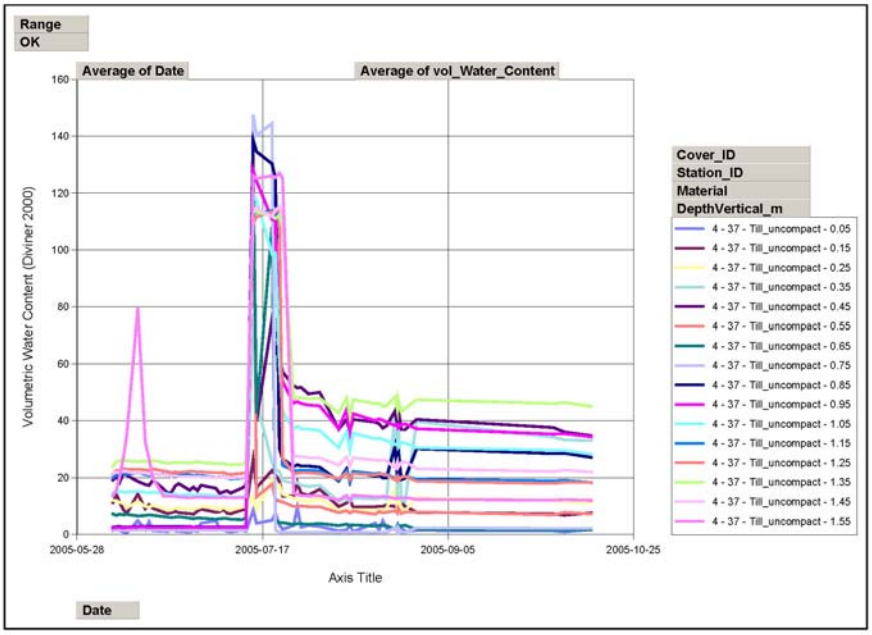

Figure 93: Daily volumetric moisture content in CT#4 (Station #37) measured manually by a Sentek Diviner 2000.

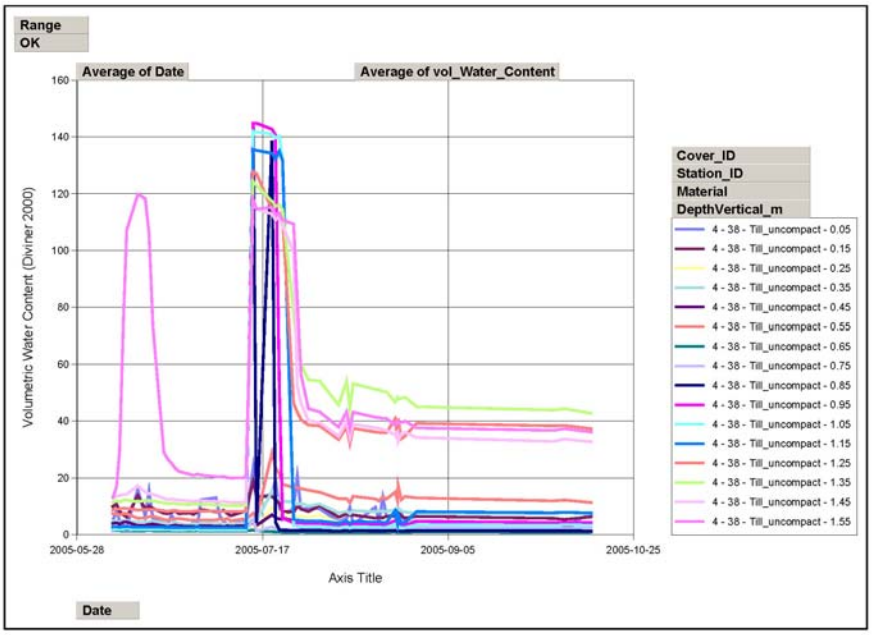

Figure 94: Daily volumetric moisture content in CT#4 (Station #38) measured manually by a Sentek Diviner 2000.

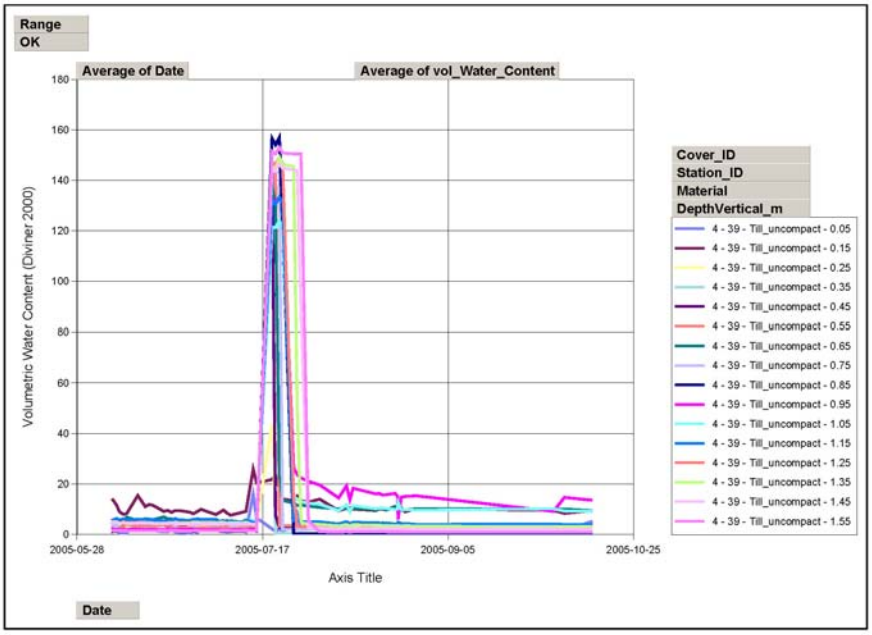

Figure 95: Daily volumetric moisture content in CT#4 (Station #39) measured manually by a Sentek Diviner 2000.

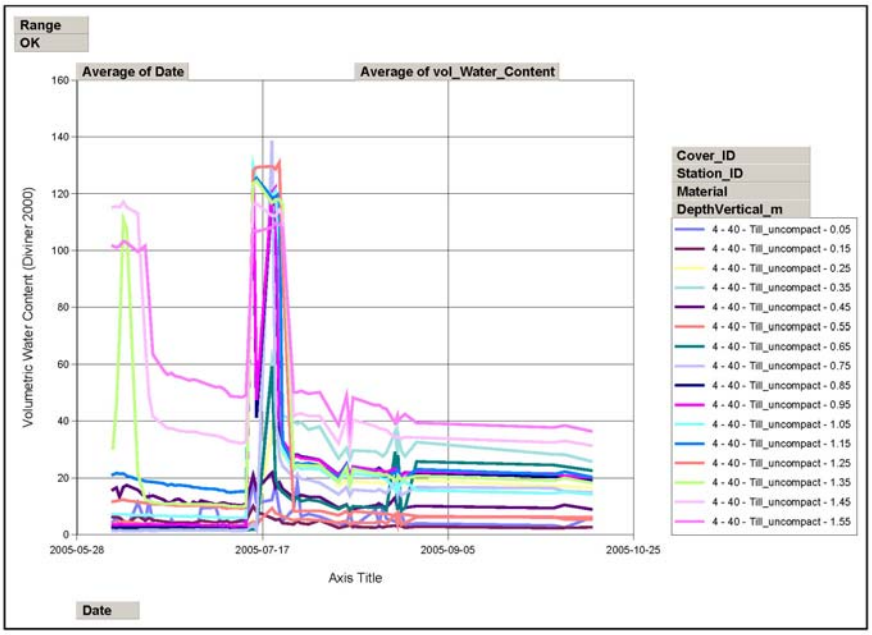

Figure 96: Daily volumetric moisture content in CT#4 (Station #40) measured manually by a Sentek Diviner 2000.

Appendix A
Notice of Monitoring Requirements for 2005 Season to ARMC Site Staff

SRK Consulting (Canada) Inc.
Suite 800 – 1066 West Hastings Street
Vancouver, B.C. V6E 3X2
Canada

vancouver@srk.com
www.srk.com

Tel: 604.681.4196
Fax: 604.687.5532

Memo

To:	Dana Haggar	**Date:**	June 8, 2005
cc:	Cam Scott	**From:**	Maritz Rykaart
Subject:	Summer 2005 Monitoring Requirements for Waste Rock and Tailings Test Covers	**Project #:**	1CD003.051

We have now completed the construction of the waste rock cover trials, including installation of the instrumentation. A complete as-built report will be issued in due time, which will include details of the required monitoring plan. However, it is imperative that we get the monitoring started immediately. To that effect, I have taken the Anvil laboratory staff, and the two summer students out to the site an explained the details of the monitoring requirements. This Technical Memorandum provides more detail on the monitoring frequency that we require for these cover trials, as well as for the two tailings test pads that was constructed in April 2004.

Table 1 below list the details of the required monitoring. This level of monitoring has been based on the assumed availability of your two summer students. In the event that you cannot commit these students to this schedule, we would provide you with a less rigorous plan, that would hopefully better suit you staff availability.

We have included an estimated time commitment for each of the tasks, in case it may assist in your planning requirements. These time commitments assume two people working together, departing from the guardhouse, completing the field task, returning to the guard house and preparing and sending the data to SRK.

Table 1: Monitoring requirements for the Period June through September 2005

Task	Details	Required Frequency	Estimated Time Commitment
Downloading of data loggers	2 x Campbell Scientific CR10X 2 x Davis Instruments 1 x Lakefield Instruments 9 x Seametrics	Bi-Weekly	3 hours
Manual moisture content readings	40 Access Tubes	Daily (whenever possible)	2 hours
Tailings test pad survey	Complete survey of pins, rocks and tubes.	Bi-Weekly	5 hours

All data collected must please be forwarded electronically to SRK on a Bi-Weekly basis. This can be done via e-mail, or if the amount of data is too much to e-mail, we will set up a dedicated site on our Portal that could be used for data management. We will evaluate this once the first set of data is available.

We understand that the first month of monitoring may identify some problems that would have to be corrected. These problems may be technical and/or logistical. I therefore plan to return to site before July 15 so that any issues could be resolved. At that time we would also re-evaluate the monitoring requirements.

Appendix B
Additional Climatic Data Calculated and Stored by Davis Instruments Vantage Pro Data Logger

Parameter	Description	Verification
Dew Point	Dew-point is the temperature to which air must be cooled for saturation (100% relative humidity) to occur, providing there is no change in water content. The dew-point is an important measurement used to predict the formation of dew, frost, and fog. Dew-point is also a good indicator of the air's actual water vapour content, unlike relative humidity, which takes the air's temperature into account. High dew-point indicates high vapour content; low dew-point indicates low vapour content. In addition a high dew-point indicates a better chance of rain and severe thunder storms.	Checked
Wind Run	Wind run is measurement of the "amount" of wind passing the station during a given period of time, expressed in either "miles of wind" or "kilometres of wind". WeatherLink calculates wind run by multiplying the average wind speed for each archive record by the archive interval.	Checked
Wind Chill	Wind chill takes into account how the speed of the wind affects our perception of air temperature. Your body warms the surrounding air molecules by transferring heat from your skin. If there's no air movement, this insulating layer of warm air molecules stays next to your body and offers some protection from cooler air molecules. Wind disperses this layer of warm air, causing the air temperature to "feel" colder. The faster the wind blows, the quicker the layer of warm air is dispersed, and the colder you feel. Above 76.7ºF (24.8ºC), wind movement has no effect on the apparent temperature. WeatherLink versions 5.1 and later use the Osczevski (1995) equation to calculate wind chill. This is the method adopted by the US National Weather Service in September of 2001.	Checked
Heat Index	The Heat Index uses the temperature and the relative humidity to determine how hot the air actually "feels." When humidity is low, the apparent temperature will be lower than the air temperature, since perspiration evaporates rapidly to cool the body. However, when humidity is high (*i.e.*, the air is saturated with water vapour) the apparent temperature "feels" higher than the actual air temperature, because perspiration evaporates more slowly. WeatherLink uses the Steadman (1979 & 1998) formula to calculate Heat Index, which is more accurate than the method used by the Vantage Pro console and is calculated for all temperatures.	Checked
THW Index	The THW Index uses humidity, temperature and wind to calculate an apparent temperature that incorporates the cooling effects of wind on our perception of temperature.	Checked
THSW Index	The THSW Index uses humidity, temperature, the cooling effects of wind and the heating effects of direct solar radiation to calculate an apparent temperature.	Checked
Solar Energy	The amount of accumulated solar radiation energy over a period of time is measured in Langleys.	Checked
UV Dose	Measured in MED which stands for Minimum Erythemal Dose, defined as the amount of sunlight exposure necessary to induce a barely perceptible redness of the skin within 24 hours after sun exposure. In other words, exposure to 1 MED will result in a reddening of the skin. Because different skin types burn at different rates, 1 MED for persons with very dark skin is different from 1 MED for persons with very light skin.	Checked
Heating DD	One heating degree–day is the amount of heat required to keep a structure at 65ºF when the outside temperature remains one degree below the 65ºF threshold for 24 hours. One heating degree–day is also the amount of heat required to keep that structure at 65ºF when the temperature remains 24ºF below that 65º threshold for 1 hour.	Checked
Cooling DD	One cooling degree–day is the amount of cooling required to keep a structure at 65ºF when the outside temperature remains one degree above the 65ºF threshold for 24 hours. One cooling degree–day is also the amount of cooling required to keep that structure at 65ºF when the temperature remains 24ºF above that 65º threshold for 1 hour.	Checked
Inside Temp	The temperature measured inside the console	Checked
Inside Humidity	The relative humidity measured inside the console	Checked
ET	Evapotranspiration is the measure of the quantity of moisture transpiring from the leaves of a crop and evaporating from the ground. ET values are calculated from measured data on wind run, air temperature, relative humidity, and solar radiation. The ET value is calculated once each hour using the data averaged over the prior hour	Checked
ISS Reception	The ISS Reception rate shows the percentage of wind data packets that have been successfully received by the Vantage Pro console	Checked

Appendix C
Summary Table of Ring-Infiltrometer Tests

2005 Single Ring Infiltrometer Tests Results - Summary

Location	Tested Date	Test No.	Test Depth	Material Tested	Effective Saturated Hydraulic Conductivity, K_{fs} (cm/sec)
CT#1	8-Jun-05	CT#1-1	Surface	Till	2.51E-04
	8-Jun-05	CT#1-2	Surface	Till	5.61E-05
	8-Jun-05	CT#1-3	Surface	Till	8.84E-05
	8-Jun-05	CT#1-4	Surface	Till	2.36E-04
	8-Jun-05	CT#1-5	Surface	Till	2.37E-05
	8-Jun-05	CT#1-6	Surface	Till	5.00E-05
CT#2A	8-Feb-05	CT#2A-1	Surface	Till	4.33E-05
	8-Feb-05	CT#2A-2	Surface	Till	4.86E-05
	8-Feb-05	CT#2A-3	Surface	Till	1.03E-04
	8-Mar-05	CT#2A-4	Surface	Till	3.50E-05
	8-Mar-05	CT#2A-5	Surface	Till	3.33E-05
	8-Mar-05	CT#2A-6	Surface	Till	2.39E-05
CT#2B	8-Feb-05	CT#2B-1	Surface	Till	1.73E-05
	8-Feb-05	CT#2B-2	Surface	Till	1.76E-05
	8-Aug-05	CT#2B-3	Surface	Till	4.09E-05
	8-Feb-05	CT#2B-4	Surface	Till	8.62E-05
	8-Aug-05	CT#2B-5	Surface	Till	5.52E-05
	8-Aug-05	CT#2B-6	Surface	Till	4.00E-05
CT#3A	8-Apr-05	CT#3A-1	Surface	Glacio-Fluvial	1.40E-03
	8-Apr-05	CT#3A-2	Surface	Glacio-Fluvial	5.07E-04
	8-Apr-05	CT#3A-3	Surface	Glacio-Fluvial	1.06E-03
	8-May-05	CT#3A-4	-50 cm	Till	1.52E-04
	8-May-05	CT#3A-5	-50 cm	Till	2.47E-04
	8-May-05	CT#3A-6	-50 cm	Till	5.52E-05
CT#3B	8-Mar-05	CT#3B-1	Surface	Glacio-Fluvial	9.43E-04
	8-Aug-05	CT#3B-2	-50 cm	Till	1.64E-04
	8-Mar-05	CT#3B-3	Surface	Glacio-Fluvial	6.89E-04
	8-Apr-05	CT#3B-4	Surface	Glacio-Fluvial	2.11E-03
	8-May-05	CT#3B-5	-50 cm	Till	6.41E-05
	8-May-05	CT#3B-6	-50 cm	Till	2.51E-04
CT#4	8-Jul-05	CT#4-1	Surface	Till	2.29E-05
	8-Jul-05	CT#4-2	Surface	Till	3.21E-05
	8-Jul-05	CT#4-3	Surface	Till	1.22E-04
	8-Jul-05	CT#4-4	Surface	Till	2.51E-05
	8-Jul-05	CT#4-5	Surface	Till	2.49E-05
	8-Jul-05	CT#4-6	Surface	Till	2.35E-05

Appendix D
Summary Table of Guelph Permeameter Tests

2005 Guelph Permeameter Tests Results - Summary

Location	Tested Date	Test No.	Test Depth	Material Tested	Effective Saturated Hydraulic Conductivity, K_{fs} (cm/sec)
CT#1-1	8-Jun-05	CT#1-1A	20 cm	Till	1.21E-04
	8-Jun-05	CT#1-1B	20 cm	Till	2.24E-04
	8-Jun-05	CT#1-1C	20 cm	Till	-8.77E-04
	8-Jun-05	CT#1-1C (40)	40 cm	Till	6.43E-05
	8-Jul-05	CT#1-1C (60)	60 cm	Till	not draining
	8-Jul-05	CT#1-1C (80)	80 cm	Till	not draining
CT#1-2	8-Jul-05	CT#1-2A	20 cm	Till	-8.54E-05
	8-Jul-05	CT#1-2B	20 cm	Till	-1.64E-04
	8-Jul-05	CT#1-2C	20 cm	Till	not draining
CT#1-3	8-Jun-05	CT#1-3A	20 cm	Till	7.60E-04
	8-Jun-05	CT#1-3B	20 cm	Till	9.33E-04
	8-Jun-05	CT#1-3C	20 cm	Till	1.38E-03
CT#1-4	8-Jul-05	CT#1-4A	20 cm	Till	2.85E-03
	8-Jul-05	CT#1-4A (40)	40 cm	Till	not draining
	8-Jul-05	CT#1-4A (60)	60 cm	Till	not draining
	8-Jul-05	CT#1-4A (80)	80 cm	Till	not draining
	8-Jul-05	CT#1-4B	20 cm	Till	2.66E-04
	8-Jul-05	CT#1-4C	20 cm	Till	not draining
CT#1-5	8-Jun-05	CT#1-5A	20 cm	Till	2.22E-04
	8-Jun-05	CT#1-5A (40)	40 cm	Till	not draining
	8-Jun-05	CT#1-5A (60)	60 cm	Till	not draining
	8-Jun-05	CT#1-5A (80)	80 cm	Till	not draining
	8-Jun-05	CT#1-5B	20 cm	Till	not draining
	8-Jun-05	CT#1-5C	20 cm	Till	not draining
CT#1-6	8-Jun-05	CT#1-6A	20 cm	Till	not draining
	8-Jul-05	CT#1-6B	20 cm	Till	3.73E-04
	8-Jul-05	CT#1-6C	20 cm	Till	not draining
CT#2A-1	8-Feb-05	CT#2A-1A	20 cm	Till	3.18E-04
	8-Feb-05	CT#2A-1B	20 cm	Till	7.94E-05
	8-May-05	CT#2A-1C	20 cm	Till	not draining
CT#2A-2	8-Feb-05	CT#2A-2A	20 cm	Till	not draining
	8-Feb-05	CT#2A-2B	20 cm	Till	not draining
	8-Feb-05	CT#2A-2C	20 cm	Till	not draining
CT#2A-3	8-Feb-05	CT#2A-3A	20 cm	Till	not draining
	8-Feb-05	CT#2A-3B	20 cm	Till	7.19E-04
	8-Feb-05	CT#2A-3C	20 cm	Till	not draining
CT#2A-4	8-May-05	CT#2A-4A	20 cm	Till	not draining
	8-May-05	CT#2A-4B	20 cm	Till	not draining
	8-May-05	CT#2A-4C	20 cm	Till	3.31E-04
CT#2A-5	8-May-05	CT#2A-5A	20 cm	Till	not draining
	8-May-05	CT#2A-5B	20 cm	Till	not draining
	8-May-05	CT#2A-5C	20 cm	Till	not draining
CT#2A-6	8-Apr-05	CT#2A-6A	20 cm	Till	not draining
	8-Apr-05	CT#2A-6B	20 cm	Till	not draining
	8-Apr-05	CT#2A-6C	20 cm	Till	-9.26E-06
CT#2B-1	8-Feb-05	CT#2B-1A	20 cm	Till	-2.99E-04
	8-Feb-05	CT#2B-1B	20 cm	Till	2.28E-04
	8-Feb-05	CT#2B-1C	20 cm	Till	4.52E-04
CT#2B-2	8-Feb-05	CT#2B-2A	20 cm	Till	1.81E-04
	8-Feb-05	CT#2B-2B	20 cm	Till	9.72E-05
	8-Feb-05	CT#2B-2C (1)	20 cm	Till	not draining
	8-Feb-05	CT#2B-2C (2)	20 cm	Till	not draining
CT#2B-3	8-May-05	CT#2B-3A	20 cm	Till	not draining
	8-May-05	CT#2B-3B	20 cm	Till	1.95E-05
	8-May-05	CT#2B-3C	20 cm	Till	not draining
CT#2B-4	8-Feb-05	CT#2B-4A	20 cm	Till	2.37E-04
	8-Feb-05	CT#2B-4B	20 cm	Till	not draining
	8-Feb-05	CT#2B-4C	20 cm	Till	7.34E-05
CT#2B-5	8-May-05	CT#2B-5A	20 cm	Till	5.20E-05
	8-May-05	CT#2B-5B	20 cm	Till	4.10E-04
	8-May-05	CT#2B-5C	20 cm	Till	2.51E-04
CT#2B-6	8-May-05	CT#2B-6A	20 cm	Till	2.18E-04
	8-May-05	CT#2B-6B	20 cm	Till	not draining
	8-May-05	CT#2B-6C	20 cm	Till	not draining
CT#3A-1	8-Oct-05	CT#3A-1A	20 cm	Glacio-Fluvial	2.00E-03
	8-Oct-05	CT#3A-1B	20 cm	Glacio-Fluvial	1.05E-03
	8-Oct-05	CT#3A-1C	20 cm	Glacio-Fluvial	-3.94E-04
CT#3A-2	8-Oct-05	CT#3A-2A	20 cm	Glacio-Fluvial	8.49E-04
	8-Oct-05	CT#3A-2B	20 cm	Glacio-Fluvial	6.85E-03
	8-Oct-05	CT#3A-2C	20 cm	Glacio-Fluvial	-9.52E-04
CT#3A-3	8-Sep-05	CT#3A-3A	20 cm	Glacio-Fluvial	-2.70E-03
	8-Sep-05	CT#3A-3B	20 cm	Glacio-Fluvial	1.93E-03
	8-Sep-05	CT#3A-3C	20 cm	Glacio-Fluvial	-1.28E-04
CT#3A-4	8-Sep-05	CT#3A-4A	20 cm	Glacio-Fluvial	4.11E-03
	8-Sep-05	CT#3A-4B	20 cm	Glacio-Fluvial	7.41E-03
	8-Sep-05	CT#3A-4C	20 cm	Glacio-Fluvial	9.75E-04
CT#3A-5	8-Sep-05	CT#3A-5A	20 cm	Glacio-Fluvial	4.67E-03
	8-Sep-05	CT#3A-5B	20 cm	Glacio-Fluvial	2.08E-03
	8-Sep-05	CT#3A-5C	20 cm	Glacio-Fluvial	3.34E-03
CT#3A-6	8-Sep-05	CT#3A-6A	20 cm	Glacio-Fluvial	9.98E-04
	8-Sep-05	CT#3A-6B	20 cm	Glacio-Fluvial	1.61E-03
	8-Sep-05	CT#3A-6C	20 cm	Glacio-Fluvial	1.23E-03
CT#3B-1	8-Mar-05	CT#3B-1A	20 cm	Glacio-Fluvial	1.28E-03
	8-Mar-05	CT#3B-1B	20 cm	Glacio-Fluvial	2.76E-03
	8-Mar-05	CT#3B-1C	20 cm	Glacio-Fluvial	1.74E-03
CT#3B-2	8-Mar-05	CT#3B-2A	20 cm	Glacio-Fluvial	5.52E-04
	8-Mar-05	CT#3B-2B	20 cm	Glacio-Fluvial	2.85E-03
	8-Mar-05	CT#3B-2C	20 cm	Glacio-Fluvial	5.54E-04
CT#3B-3	8-Apr-05	CT#3B-3A	20 cm	Glacio-Fluvial	1.50E-03
	8-Apr-05	CT#3B-3B	20 cm	Glacio-Fluvial	2.80E-03
	8-Apr-05	CT#3B-3C	20 cm	Glacio-Fluvial	3.06E-03
CT#3B-4	8-Mar-05	CT#3B-4A	20 cm	Glacio-Fluvial	3.88E-04
	8-Mar-05	CT#3B-4B	20 cm	Glacio-Fluvial	3.30E-03
	8-Mar-05	CT#3B-4C	20 cm	Glacio-Fluvial	-4.78E-05
CT#3B-5	8-Apr-05	CT#3B-5A	20 cm	Glacio-Fluvial	1.25E-03
	8-Apr-05	CT#3B-5B	20 cm	Glacio-Fluvial	2.15E-04
	8-Apr-05	CT#3B-5C	20 cm	Glacio-Fluvial	not draining
CT#3B-6	8-Apr-05	CT#3B-6A	20 cm	Glacio-Fluvial	2.35E-03
	8-Apr-05	CT#3B-6B	20 cm	Glacio-Fluvial	6.56E-04
	8-Apr-05	CT#3B-6C	20 cm	Glacio-Fluvial	1.50E-03
CT#4-1	8-Aug-05	CT#4-1A	20 cm	Till	not draining
	8-Aug-05	CT#4-1B	20 cm	Till	-6.88E-05
	8-Sep-05	CT#4-1C	20 cm	Till	-1.40E-05
CT#4-2	8-Aug-05	CT#4-2A	20 cm	Till	1.21E-04
	8-Aug-05	CT#4-2B	20 cm	Till	1.06E-04
	8-Aug-05	CT#4-2B (40)	40 cm	Till	-3.58E-05
	8-Aug-05	CT#4-2B (60)	60 cm	Till	not draining
	8-Aug-05	CT#4-2C	20 cm	Till	not draining
CT#4-3	8-Aug-05	CT#4-3A	20 cm	Till	not draining
	8-Aug-05	CT#4-3B	20 cm	Till	not draining
	8-Aug-05	CT#4-3C	20 cm	Till	not draining
	8-Aug-05	CT#4-3C (40)	40 cm	Till	not draining
	8-Aug-05	CT#4-3C (60)	60 cm	Till	-7.23E-05
CT#4-4	8-Jul-05	CT#4-4A	20 cm	Till	6.69E-05
	8-Jul-05	CT#4-4B	20 cm	Till	not draining
	8-Jul-05	CT#4-4C	20 cm	Till	not draining
CT#4-5	8-Aug-05	CT#4-5A	20 cm	Till	2.21E-04
	8-Aug-05	CT#4-5B	20 cm	Till	2.26E-04
	8-Aug-05	CT#4-5C	20 cm	Till	1.70E-04
CT#4-6	8-Jul-05	CT#4-6A	20 cm	Till	not draining
	8-Jul-05	CT#4-6B	20 cm	Till	-1.57E-05
	8-Jul-05	CT#4-6C	20 cm	Till	-4.55E-05
	8-Aug-05	CT#4-6C (40)	40 cm	Till	2.69E-05
	8-Sep-05	CT#4-6C (60)	60 cm	Till	not draining

Appendix E
Ring-Infiltrometer Field Data Sheets

Single Ring Infiltrometer Calculation Sheet - CT#1-1

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 10.7 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	14:19			13.4		
	14:29	10	10	12.4	1.0	6.0
2	14:29			12.4		
	14:49	20	30	10.3	2.1	6.3
3	14:49			10.3		
	15:09	20	50	8.8	1.5	4.5
4	15:09			8.8		
	15:29	20	70	7.3	1.5	4.5
5	15:29			7.3		
	15:49	20	90	6.1	1.2	3.6
6	15:49			6.1		
	16:09	20	110	5.1	1.0	3.0
7	16:39			15.2		
	16:49	10	150	14.5	0.7	4.2
8	16:49			14.5		
	17:09	20	170	13.3	1.2	3.6
9	17:09			13.3		
	17:29	20	190	12.2	1.1	3.3
10	17:29			12.2		
	17:49	20	210	11.2	1.0	3.0
11	17:49			11.2		
	18:09	20	230	10.2	1.0	3.0
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Average Infiltration Rate: 3.10 cm/hr
Infiltration Rate (account for lateral divergence): 2.26 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.67E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#1-2

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-2
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 11.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:08			16.9		
	10:18	10	10	16.4	0.5	3.0
2	10:18			16.4		
	10:28	10	20	15.8	0.6	3.6
3	10:28			15.8		
	10:38	10	30	15.3	0.5	3.0
4	10:38			15.3		
	10:48	10	40	14.9	0.4	2.4
5	10:48			14.9		
	10:58	10	50	14.4	0.5	3.0
6	10:58			14.4		
	11:08	10	60	14	0.4	2.4
7	11:08			14		
	11:28	20	80	13.3	0.7	2.1
8	11:28			13.3		
	11:48	20	100	12.8	0.5	1.5
9	11:48			12.8		
	12:08	20	120	12.2	0.6	1.8
10	12:08			12.2		
	12:28	20	140	11.6	0.6	1.8
11	12:28			11.6		
	12:48	20	160	11.1	0.5	1.5
12	12:48			11.1		
	13:08	20	180	10.6	0.5	1.5
13	13:08			10.6		
	13:28	20	200	10.1	0.5	1.5
14	13:28			10.1		
	13:48	20	220	9.6	0.5	1.5
15	13:48			9.6		
	14:08	20	240	9.2	0.4	1.2
16	14:08			9.2		
	14:28	20	260	8.8	0.4	1.2
17	14:28			8.8		
	14:48	20	280	8.4	0.4	1.2
18	14:48			8.4		
	15:08	20	300	8	0.4	1.2
19	15:08			8		
	15:28	20	320	7.8	0.2	0.6
20	15:28			7.8		
	15:48	20	340	7.6	0.2	0.6
21	15:48			7.6		
	16:08	20	360	7.3	0.3	0.9
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Average Infiltration Rate: 0.70 cm/hr
Infiltration Rate (account for lateral divergence): 0.51 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.26E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#1-3

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-3
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 11.5 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:00			17.7		
	11:05	5	5	16.9	0.8	9.6
2	11:05			16.9		
	11:10	5	10	16.3	0.6	7.2
3	11:10			16.3		
	11:20	10	20	15.8	0.5	3.0
4	11:20			15.8		
	11:30	10	30	15.3	0.5	3.0
5	11:30			15.3		
	11:50	20	50	14.5	0.8	2.4
6	11:50			14.5		
	12:10	20	70	13.7	0.8	2.4
7	12:10			13.7		
	12:30	20	90	13.0	0.7	2.1
8	12:30			13.0		
	12:50	20	110	12.3	0.7	2.1
9	12:50			12.3		
	13:10	20	130	11.6	0.7	2.1
10	13:10			11.6		
	13:30	20	150	11.0	0.6	1.8
11	13:30			11.0		
	13:50	20	170	10.4	0.6	1.8
12	13:50			10.4		
	14:10	20	190	9.8	0.6	1.8
13	14:10			9.8		
	14:30	20	210	9.2	0.6	1.8
14	14:30			9.2		
	14:50	20	230	8.8	0.4	1.2
15	14:50			8.8		
	15:10	20	250	8.4	0.4	1.2
16	15:10			8.4		
	15:30	20	270	8.0	0.4	1.2
17	15:30			8.0		
	15:50	20	290	7.7	0.3	0.9
18	15:50			7.7		
	16:10	20	310	7.3	0.4	1.2
19	16:10			7.3		
	16:30	20	330	7.0	0.3	0.9
20	16:30			7.0		
	16:50	20	350	6.6	0.4	1.2
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Average Infiltration Rate: 1.10 cm/hr
Infiltration Rate (account for lateral divergence): 0.80 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.99E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#1-4

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 10.4 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:36			13.1		
	10:46	10	10	11.9	1.2	7.2
2	10:46			11.9		
	10:56	10	20	10.9	1.0	6.0
3	10:56			10.9		
	11:06	10	30	10.2	0.7	4.2
4	11:06			10.2		
	11:16	10	40	9.5	0.7	4.2
5	11:16			9.5		
	11:26	10	50	8.9	0.6	3.6
6	11:26			8.9		
	11:46	20	70	7.9	1.0	3.0
7	11:46			7.9		
	12:06	20	90	7.0	0.9	2.7
8	12:06			7.0		
	12:26	20	110	6.1	0.9	2.7
9	12:26			6.1		
	12:46	20	130	5.3	0.8	2.4
10	12:46			5.3		
	13:06	20	150	4.5	0.8	2.4
11	13:16			17.2		
	13:26	10	170	16.4	0.8	4.8
12	13:26			16.4		
	13:46	20	190	15.0	1.4	4.2
13	13:46			15.0		
	14:06	20	210	13.8	1.2	3.6
14	14:06			13.8		
	14:26	20	230	12.8	1.0	3.0
15	14:26			12.8		
	14:46	20	250	11.8	1.0	3.0
16	14:46			11.8		
	15:06	20	270	10.8	1.0	3.0
17	15:06			10.8		
	15:26	20	290	10.5	0.3	0.9
18	15:26			10.5		
	15:46	20	310	9.4	1.1	3.3
19	15:46			9.4		
	16:06	20	330	8.6	0.8	2.4
20	16:06			8.6		
	16:26	20	350	7.6	1.0	3.0
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Average Infiltration Rate: 2.90 cm/hr
Infiltration Rate (account for lateral divergence): 2.11 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.34E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#1-5

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 12.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:59			13.4		
	12:04	5	5	13.4	0.0	0.0
2	12:04			13.4		
	12:14	10	15	13.3	0.1	0.6
3	12:14			13.3		
	12:24	10	25	13.2	0.1	0.6
4	12:24			13.2		
	12:44	20	45	13.1	0.1	0.3
5	12:44			13.1		
	13:04	20	65	13.0	0.1	0.3
6	13:04			13.0		
	13:24	20	85	12.8	0.2	0.6
7	13:24			12.8		
	13:44	20	105	12.7	0.1	0.3
8	13:44			12.7		
	14:04	20	125	12.6	0.1	0.3
9	14:04			12.6		
	14:24	20	145	12.6	0.0	0.0
10	14:24			12.6		
	14:44	20	165	12.6	0.0	0.0
11	14:44			12.6		
	15:04	20	185	12.5	0.1	0.3
12	15:04			12.5		
	15:24	20	205	12.5	0.0	0.0
13	15:24			12.5		
	15:44	20	225	12.4	0.1	0.3
14	15:44			12.4		
	16:04	20	245	12.3	0.1	0.3
15	16:04			12.3		
	16:24	20	265	12.2	0.1	0.3
16	16:24			12.2		
	16:44	20	285	12.1	0.1	0.3
17	16:44			12.1		
	17:04	20	305	12.0	0.1	0.3
18	17:04			12.0		
	17:24	20	325	11.9	0.1	0.3
19	17:24			11.9		
	17:44	20	345	11.8	0.1	0.3
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Average Infiltration Rate: 0.30 cm/hr
Infiltration Rate (account for lateral divergence): 0.22 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.32E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#1-6

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-6
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 8.7 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	13:07			12.7		
	13:12	5	5	12.3	0.4	4.8
2	13:12			12.3		
	13:22	10	15	11.7	0.6	3.6
3	13:22			11.7		
	13:42	20	35	10.7	1.0	3.0
4	13:42			10.7		
	14:02	20	55	9.9	0.8	2.4
5	14:02			9.9		
	14:22	20	75	9.4	0.5	1.5
6	14:22			9.4		
	14:42	20	95	8.9	0.5	1.5
7	14:42			8.9		
	15:02	20	115	8.4	0.5	1.5
8	15:02			8.4		
	15:22	20	135	8.0	0.4	1.2
9	15:22			8.0		
	15:42	20	155	7.7	0.3	0.9
10	15:42			7.7		
	16:02	20	175	7.4	0.3	0.9
11	16:02			7.4		
	16:22	20	195	7.1	0.3	0.9
12	16:22			7.1		
	16:42	20	215	6.8	0.3	0.9
13	16:42			6.8		
	17:02	20	235	6.6	0.2	0.6
14	17:02			6.6		
	17:22	20	255	6.4	0.2	0.6
15	17:22			6.4		
	17:42	20	275	6.2	0.2	0.6
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Average Infiltration Rate: 0.60 cm/hr
Infiltration Rate (account for lateral divergence): 0.44 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.14E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2A-1

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-1
Operator: Karin Wagner

Inner Diameter of Ring:	58 cm
Inner Area of Ring:	2642.1 cm2
Lateral Divergence:	5 cm
Depth of Wetting Front:	55 cm
Water Entry Value:	-1.5 cm
Average Depth of Water in Ring:	10.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	15:01			13.1		
	16:01	60	60	12	1.1	1.1
2	16:01			12		
	17:01	60	120	11.2	0.8	0.8
3	17:01			11.2		
	18:01	60	180	10.4	0.8	0.8
4	18:01			10.4		
	19:01	60	240	9.8	0.6	0.6
5	19:01			9.8		
	20:01	60	300	9.3	0.5	0.5
6	20:01			9.3		
	21:01	60	360	8.8	0.5	0.5
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Average Infiltration Rate:	0.53 cm/hr
Infiltration Rate (account for lateral divergence):	0.39 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}:	9.78E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2A-2

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-2
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 10.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	16:05			13.1		
	16:35	30	30	12.4	0.7	1.4
2	16:35			12.4		
	17:05	30	60	12	0.4	0.8
3	17:05			12		
	17:35	30	90	11.5	0.5	1.0
4	17:35			11.5		
	18:05	30	120	11.1	0.4	0.8
5	18:05			11.1		
	18:35	30	150	10.7	0.4	0.8
6	18:35			10.7		
	19:05	30	180	10.4	0.3	0.6
7	19:05			10.4		
	19:35	30	210	10.1	0.3	0.6
8	19:35			10.1		
	20:05	30	240	9.8	0.3	0.6
9	20:05			9.8		
	20:35	30	270	9.5	0.3	0.6
10	20:35			9.5		
	21:05	30	300	9.2	0.3	0.6
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Average Infiltration Rate: 0.60 cm/hr
Infiltration Rate (account for lateral divergence): 0.44 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.10E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2A-3

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-3
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 2.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	15:25			6.9		
	15:55	30	30	5.3	1.6	3.2
2	15:55			5.3		
	16:25	30	60	4.2	1.1	2.2
3	16:25			4.2		
	16:55	30	90	3.4	0.8	1.6
4	16:55			3.4		
	17:25	30	120	2.5	0.9	1.8
5	17:25			2.5		
	17:55	30	150	1.9	0.6	1.2
6	17:55			1.9		
	18:25	30	180	1.3	0.6	1.2
7	18:25			1.3		
	18:55	30	210	0.8	0.5	1.0
8	19:03			3.6		
	19:33	30	248	3	0.6	1.2
9	19:33			3		
	20:03	30	278	2.4	0.6	1.2
10	20:03			2.4		
	20:33	30	308	1.8	0.6	1.2
11	20:33			1.8		
	21:03	30	338	1.3	0.5	1.0
12						
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Average Infiltration Rate: 1.13 cm/hr
Infiltration Rate (account for lateral divergence): 0.82 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 2.38E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2A-4

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-4
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 5.1 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:15			8.3		
	10:45	30	30	7.7	0.6	1.2
2	10:45			7.7		
	11:15	30	60	7.2	0.5	1.0
3	11:15			7.2		
	11:45	30	90	6.8	0.4	0.8
4	11:45			6.8		
	12:15	30	120	6.4	0.4	0.8
5	12:15			6.4		
	12:45	30	150	6	0.4	0.8
6	12:45			6		
	13:15	30	180	5.6	0.4	0.8
7	13:15			5.6		
	13:45	30	210	5.3	0.3	0.6
8	13:45			5.3		
	14:15	30	240	5	0.3	0.6
9	14:15			5		
	14:45	30	270	4.73	0.3	0.5
10	14:45			4.73		
	15:15	30	300	4.4	0.3	0.7
11	15:15			4.4		
	15:45	30	330	4.2	0.2	0.4
12	15:45			4.2		
	16:15	30	360	4.1	0.1	0.2
13	16:15			4.1		
	16:45	30	390	3.8	0.3	0.6
14	16:45			3.8		
	17:15	30	420	3.6	0.2	0.4
15	17:15			3.6		
	17:45	30	450	3.4	0.2	0.4
16	17:45			3.4		
	18:15	30	480	3.2	0.2	0.4
17	18:15			3.2		
	18:45	30	510	3	0.2	0.4
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Average Infiltration Rate: 0.40 cm/hr
Infiltration Rate (account for lateral divergence): 0.29 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 8.07E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2A-5

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-5
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 8.8 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:15			12.1		
	10:45	30	30	11.3	0.8	1.6
2	10:45			11.3		
	11:15	30	60	10.8	0.5	1.0
3	11:15			10.8		
	11:45	30	90	10.4	0.4	0.8
4	11:45			10.4		
	12:15	30	120	10.0	0.4	0.8
5	12:15			10.0		
	12:45	30	150	9.6	0.4	0.8
6	12:45			9.6		
	13:15	30	180	9.2	0.4	0.8
7	13:15			9.2		
	13:45	30	210	9.0	0.2	0.4
8	13:45			9.0		
	14:15	30	240	8.7	0.3	0.6
9	14:15			8.7		
	14:45	30	270	8.4	0.3	0.6
10	14:45			8.4		
	15:15	30	300	8.2	0.2	0.4
11	15:15			8.2		
	15:45	30	330	7.9	0.3	0.6
12	15:45			7.9		
	16:15	30	360	7.7	0.2	0.4
13	16:15			7.7		
	16:45	30	390	7.4	0.3	0.6
14	16:45			7.4		
	17:15	30	420	7.2	0.2	0.4
15	17:15			7.2		
	17:45	30	450	7.0	0.2	0.4
16	17:45			7.0		
	18:15	30	480	6.8	0.2	0.4
17	18:15			6.8		
	18:45	30	510	6.6	0.2	0.4
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Average Infiltration Rate: 0.40 cm/hr
Infiltration Rate (account for lateral divergence): 0.29 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 7.57E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2A-6

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-6
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 3.5 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:15			6.1		
	10:45	30	30	5.4	0.7	1.4
2	10:45			5.4		
	11:15	30	60	5.0	0.4	0.8
3	11:15			5.0		
	11:45	30	90	4.7	0.3	0.6
4	11:45			4.7		
	12:15	30	120	4.4	0.3	0.6
5	12:15			4.4		
	12:45	30	150	4.1	0.3	0.6
6	12:45			4.1		
	13:15	30	180	3.9	0.2	0.4
7	13:15			3.9		
	13:45	30	210	3.7	0.2	0.4
8	13:45			3.7		
	14:15	30	240	3.5	0.2	0.4
9	14:15			3.5		
	14:45	30	270	3.3	0.2	0.4
10	14:45			3.3		
	15:15	30	300	3.1	0.2	0.4
11	15:15			3.1		
	15:45	30	330	2.9	0.2	0.4
12	15:45			2.9		
	16:15	30	360	2.7	0.2	0.4
13	16:15			2.7		
	16:45	30	390	2.5	0.2	0.4
14	16:45			2.5		
	17:15	30	420	2.3	0.2	0.4
15	17:15			2.3		
	17:45	30	450	2.1	0.2	0.4
16	17:45			2.1		
	18:15	30	480	2.0	0.1	0.2
17	18:15			2.0		
	18:45	30	510	1.9	0.1	0.2
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Average Infiltration Rate: 0.27 cm/hr
Infiltration Rate (account for lateral divergence): 0.19 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.54E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2B-1

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-1
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 6.0 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	07:54			7.1		
	08:24	30	30	6.7	0.4	0.8
2	08:24			6.7		
	08:54	30	60	6.5	0.2	0.4
3	08:54			6.5		
	09:24	30	90	6.4	0.1	0.2
4	09:24			6.4		
	10:24	60	150	5.9	0.5	0.5
5	10:24			5.9		
	11:24	60	210	5.6	0.3	0.3
6	11:24			5.6		
	12:24	60	270	5.4	0.2	0.2
7	12:24			5.4		
	13:24	60	330	5.2	0.2	0.2
8	13:24			5.2		
	14:24	60	390	5.0	0.2	0.2
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Average Infiltration Rate: 0.20 cm/hr
Infiltration Rate (account for lateral divergence): 0.15 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 3.97E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2B-2

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-2
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 4.7 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	07:47			5.9		
	08:17	30	30	5.4	0.5	1.0
2	08:17			5.4		
	08:47	30	60	5.1	0.3	0.6
3	08:47			5.1		
	09:17	30	90	4.9	0.2	0.4
4	09:17			4.9		
	10:17	60	150	4.6	0.3	0.3
5	10:17			4.6		
	11:17	60	210	4.4	0.2	0.2
6	11:17			4.4		
	12:17	60	270	4.2	0.2	0.2
7	12:17			4.2		
	13:17	60	330	4.0	0.2	0.2
8	13:17			4.0		
	14:17	60	390	3.8	0.2	0.2
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Average Infiltration Rate: 0.20 cm/hr
Infiltration Rate (account for lateral divergence): 0.15 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 4.07E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2B-3

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-3
Operator: Karin Wagner

Inner Diameter of Ring:	58 cm
Inner Area of Ring:	2642.1 cm2
Lateral Divergence:	5 cm
Depth of Wetting Front:	55 cm
Water Entry Value:	-1.5 cm
Average Depth of Water in Ring:	15.1 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:20			17.1		
	10:25	5	5	17.0	0.1	1.2
2	10:25			17.0		
	10:45	20	25	16.7	0.3	0.9
3	10:45			16.7		
	11:15	30	55	16.3	0.4	0.8
4	11:15			16.3		
	11:45	30	85	15.9	0.4	0.8
5	11:45			15.9		
	12:15	30	115	15.5	0.4	0.8
6	12:15			15.5		
	12:45	30	145	15.2	0.3	0.6
7	12:45			15.2		
	13:15	30	175	14.8	0.4	0.8
8	13:15			14.8		
	13:45	30	205	14.5	0.3	0.6
9	13:45			14.5		
	14:15	30	235	14.2	0.3	0.6
10	14:15			14.2		
	14:45	30	265	14.0	0.2	0.4
11	14:45			14.0		
	15:15	30	295	13.7	0.3	0.6
12	15:15			13.7		
	15:45	30	325	13.4	0.3	0.6
13	15:45			13.4		
	16:15	30	355	13.2	0.2	0.4
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Average Infiltration Rate:	0.53 cm/hr
Infiltration Rate (account for lateral divergence):	0.39 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}:	9.11E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2B-4

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-4
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 3.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	07:56			3.2		
	08:26	30	30	1.3	1.9	3.8
2	08:32			6.4		
	09:02	30	66	4.9	1.5	3.0
3	09:02			4.9		
	09:32	30	96	4.2	0.7	1.4
4	09:32			4.2		
	10:02	30	126	3.6	0.6	1.2
5	10:02			3.6		
	10:32	30	156	2.9	0.7	1.4
6	10:32			2.9		
	11:02	30	186	2.6	0.3	0.6
7	11:09			6.1		
	11:39	30	223	5.5	0.6	1.2
8	11:39			5.5		
	12:39	60	283	4.4	1.1	1.1
9	12:39			4.4		
	13:39	60	343	3.5	0.9	0.9
10	13:39			3.5		
	14:09	30	373	3.0	0.5	1.0
11	14:09			3.0		
	14:39	30	403	2.5	0.5	1.0
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Average Infiltration Rate: 0.97 cm/hr
Infiltration Rate (account for lateral divergence): 0.70 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.99E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2B-5

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-5
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 16.7 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:37			19.5		
	10:47	10	10	19.3	0.2	1.2
2	10:47			19.3		
	11:17	30	40	18.5	0.8	1.6
3	11:17			18.5		
	11:47	30	70	17.9	0.6	1.2
4	11:47			17.9		
	12:17	30	100	17.4	0.5	0.9
5	12:17			17.4		
	12:47	30	130	16.9	0.5	1.1
6	12:47			16.9		
	13:17	30	160	16.5	0.4	0.8
7	13:17			16.5		
	13:47	30	190	16.1	0.4	0.8
8	13:47			16.1		
	14:17	30	220	15.7	0.4	0.8
9	14:17			15.7		
	14:47	30	250	15.4	0.3	0.6
10	14:47			15.4		
	15:17	30	280	15.0	0.4	0.8
11	15:17			15.0		
	15:47	30	310	14.6	0.4	0.8
12	15:47			14.6		
	16:17	30	340	14.3	0.3	0.6
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Average Infiltration Rate: 0.73 cm/hr
Infiltration Rate (account for lateral divergence): 0.53 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.22E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3A-1

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-1
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 14.0 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	08:57			18.5		
	08:59	2	2	17.0	1.5	45.0
2	08:59			17.0		
	09:01	2	4	15.8	1.2	36.0
3	09:01			15.8		
	09:03	2	6	14.7	1.1	33.0
4	09:03			14.7		
	09:05	2	8	13.6	1.1	33.0
5	09:05			13.6		
	09:07	2	10	12.7	0.9	27.0
6	09:07			12.7		
	09:09	2	12	11.8	0.9	27.0
7	09:15			16.0		
	09:17	2	20	14.8	1.2	36.0
8	09:17			14.8		
	09:19	2	22	13.8	1.0	30.0
9	09:19			13.8		
	09:21	2	24	13.1	0.7	21.0
10	09:21			13.1		
	09:23	2	26	12.3	0.8	24.0
11	09:23			12.3		
	09:25	2	28	11.5	0.8	24.0
12	09:25			11.5		
	09:27	2	30	10.7	0.8	24.0
13	09:27			10.7		
	09:29	2	32	10.1	0.6	18.0
14	09:40			19.3		
	09:42	2	45	18.3	1.0	30.0
15	09:42			18.3		
	09:44	2	47	17.3	1.0	30.0
16	09:44			17.3		
	09:46	2	49	16.2	1.1	33.0
17	09:46			16.2		
	09:48	2	51	15.3	0.9	27.0
18	09:48			15.3		
	09:50	2	53	14.4	0.9	27.0
19	09:50			14.4		
	09:52	2	55	13.5	0.9	27.0
20	09:52			13.5		
	09:54	2	57	12.8	0.7	21.0
21	09:54			12.8		
	09:56	2	59	12.0	0.8	24.0
22	09:56			12.0		
	09:58	2	61	11.4	0.6	18.0
23	09:58			11.4		
	10:00	2	63	10.6	0.8	24.0
24	10:00			10.6		
	10:02	2	65	10.0	0.6	18.0
25	10:09			19.5		
	10:14	5	77	17.1	2.4	28.8
26	10:14			17.1		
	10:19	5	82	14.9	2.2	26.4
27	10:19			14.9		
	10:24	5	87	13.0	1.9	22.8
28	10:24			13.0		
	10:29	5	92	11.3	1.7	20.4
29	10:29			11.3		
	10:34	5	97	9.7	1.6	19.2
30	10:40			17.4		
	10:45	5	108	15.4	2.0	24.0
31	10:45			15.4		
	10:50	5	113	13.6	1.8	21.6
32	10:50			13.6		
	10:55	5	118	12.0	1.6	19.2
33	10:55			12.0		
	11:00	5	123	10.4	1.6	19.2

Average Infiltration Rate: 20.00 cm/hr
Infiltration Rate (account for lateral divergence): 14.55 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 3.48E-03 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#2B-6

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-6
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 16.8 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:09			18.9		
	11:19	10	10	18.6	0.3	1.8
2	11:19			18.6		
	11:49	30	40	18.0	0.6	1.2
3	11:49			18.0		
	12:19	30	70	17.4	0.6	1.2
4	12:19			17.4		
	12:49	30	100	17.0	0.4	0.8
5	12:49			17.0		
	13:19	30	130	16.8	0.2	0.4
6	13:19			16.8		
	13:49	30	160	16.6	0.2	0.4
7	13:49			16.6		
	14:19	30	190	16.3	0.3	0.6
8	14:19			16.3		
	14:49	30	220	16.1	0.2	0.4
9	14:49			16.1		
	15:19	30	250	15.8	0.3	0.6
10	15:19			15.8		
	15:49	30	280	15.6	0.2	0.4
11	15:49			15.6		
	16:19	30	310	15.3	0.3	0.6
12						
13						
14						
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Average Infiltration Rate: 0.53 cm/hr
Infiltration Rate (account for lateral divergence): 0.39 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 8.87E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3A-2

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-2
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 5.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	12:02			11.3		
	12:04	2	2	10.4	0.9	27.0
2	12:04			10.4		
	12:06	2	4	9.7	0.7	21.0
3	12:06			9.7		
	12:08	2	6	9.2	0.5	15.0
4	12:08			9.2		
	12:10	2	8	8.7	0.5	15.0
5	12:10			8.7		
	12:12	2	10	8.3	0.4	12.0
6	12:12			8.3		
	12:14	2	12	7.9	0.4	12.0
7	12:14			7.9		
	12:19	5	17	6.9	1.0	12.0
8	12:19			6.9		
	12:24	5	22	6.1	0.8	9.6
9	12:24			6.1		
	12:29	5	27	5.2	0.9	10.8
10	12:29			5.2		
	12:34	5	32	4.4	0.8	9.6
11	12:34			4.4		
	12:39	5	37	4.0	0.4	4.8
12	12:39			4.0		
	12:44	5	42	3.4	0.6	7.2
13	12:44			3.4		
	12:49	5	47	2.8	0.6	7.2
14	12:49			2.8		
	12:54	5	52	2.2	0.6	7.2
15	12:54			2.2		
	12:59	5	57	1.6	0.6	7.2
16	13:13			10.8		
	13:18	5	76	9.8	1.0	12.0
17	13:18			9.8		
	13:23	5	81	8.9	0.9	10.8
18	13:23			8.9		
	13:28	5	86	8.1	0.8	9.6
19	13:28			8.1		
	13:33	5	91	7.4	0.7	8.4
20	13:33			7.4		
	13:38	5	96	6.8	0.6	7.2
21	13:38			6.8		
	13:43	5	101	6.2	0.6	7.2
22	13:43			6.2		
	13:48	5	106	5.6	0.6	7.2
23	13:48			5.6		
	13:53	5	111	5.0	0.6	7.2
24	13:53			5.0		
	13:58	5	116	4.4	0.6	7.2
25	13:58			4.4		
	14:03	5	121	3.9	0.5	6.0
26	14:03			3.9		
	14:08	5	126	3.4	0.5	6.0
27	14:08			3.4		
	14:13	5	131	2.9	0.5	6.0
28	14:13			2.9		
	14:18	5	136	2.4	0.5	6.0
29	14:18			2.4		
	14:23	5	141	1.9	0.5	6.0
30	14:23			1.9		
	14:28	5	146	1.3	0.6	7.2
31						
32						
33						

Average Infiltration Rate: 6.40 cm/hr
Infiltration Rate (account for lateral divergence): 4.66 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.27E-03 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3A-3

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-3
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 6.4 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:55			10.9		
	11:59	4	4	8.2	2.7	40.5
2	11:59			8.2		
	12:03	4	8	6.2	2.0	30.0
3	12:03			6.2		
	12:07	4	12	4.6	1.6	24.0
4	12:07			4.6		
	12:11	4	16	3.3	1.3	19.5
5	12:11			3.3		
	12:15	4	20	2.0	1.3	19.5
6	12:26			14.5		
	12:30	4	35	12.5	2.0	30.0
7	12:30			12.5		
	12:34	4	39	10.6	1.9	28.5
8	12:34			10.6		
	12:38	4	43	9.2	1.4	21.0
9	12:38			9.2		
	12:42	4	47	7.7	1.5	22.5
10	12:42			7.7		
	12:46	4	51	6.4	1.3	19.5
11	12:46			6.4		
	12:50	4	55	5.1	1.3	19.5
12	12:50			5.1		
	12:54	4	59	4.1	1.0	15.0
13	12:54			4.1		
	12:58	4	63	3.2	0.9	13.5
14	12:58			3.2		
	13:02	4	67	2.3	0.9	13.5
15	13:02			2.3		
	13:06	4	71	1.4	0.9	13.5
16	13:12			9.3		
	13:16	4	81	8.0	1.3	19.5
17	13:16			8.0		
	13:20	4	85	6.9	1.1	16.5
18	13:20			6.9		
	13:24	4	89	5.9	1.0	15.0
19	13:24			5.9		
	13:28	4	93	4.9	1.0	15.0
20	13:28			4.9		
	13:32	4	97	3.9	1.0	15.0
21	13:32			3.9		
	13:36	4	101	3.1	0.8	12.0
22	13:36			3.1		
	13:40	4	105	2.2	0.9	13.5
23	13:44			13.2		
	13:48	4	113	11.6	1.6	24.0
24	13:48			11.6		
	13:52	4	117	10.4	1.2	18.0
25	13:52			10.4		
	13:56	4	121	9.2	1.2	18.0
26	13:56			9.2		
	14:00	4	125	8.1	1.1	16.5
27	14:00			8.1		
	14:04	4	129	7.1	1.0	15.0
28	14:04			7.1		
	14:08	4	133	6.1	1.0	15.0
29	14:08			6.1		
	14:12	4	137	5.1	1.0	15.0
30	14:12			5.1		
	14:16	4	141	4.1	1.0	15.0
31	14:16			4.1		
	14:20	4	145	3.2	0.9	13.5
32	14:20			3.2		
	14:24	4	149	2.3	0.9	13.5
33	14:24			2.3		
	14:28	4	153	1.4	0.9	13.5

Average Infiltration Rate: 13.50 cm/hr
Infiltration Rate (account for lateral divergence): 9.82 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 2.66E-03 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3A-4

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-4
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 23.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	08:41			17.2		
	08:46	5	5	18.4	-1.2	-14.4
2	08:46			18.4		
	08:51	5	10	18.9	-0.5	-6.0
3	08:51			18.9		
	09:21	30	40	20.2	-1.3	-2.6
4	09:21			20.2		
	09:51	30	70	21.4	-1.2	-2.4
5	09:51			21.4		
	10:21	30	100	22.6	-1.2	-2.4
6	10:21			22.6		
	10:51	30	130	23.6	-1.0	-2.0
7	10:51			23.6		
	11:11	20	150	24.5	-0.9	-2.7
8	11:11			24.5		
	11:31	20	170	25.2	-0.7	-2.1
9	11:31			25.2		
	11:51	20	190	25.9	-0.7	-2.1
10	11:51			25.9		
	12:11	20	210	26.4	-0.5	-1.5
11	12:11			26.4		
	12:31	20	230	27.0	-0.6	-1.8
12	12:31			27.0		
	12:51	20	250	27.5	-0.5	-1.5
13	12:51			27.5		
	13:11	20	270	28.0	-0.5	-1.5
14	13:11			28.0		
	13:31	20	290	28.6	-0.6	-1.8
15	13:31			28.6		
	13:51	20	310	29.1	-0.5	-1.5
16	13:51			29.1		
	14:11	20	330	29.5	-0.4	-1.2
17	14:11			29.5		
	14:31	20	350	29.8	-0.3	-0.9
18	14:43			18.8		
	15:03	20	382	19.8	-1.0	-3.0
19	15:03			19.8		
	15:23	20	402	20.5	-0.7	-2.1
20	15:23			20.5		
	15:53	30	432	21.6	-1.1	-2.2
21	15:53			21.6		
	16:23	30	462	22.8	-1.2	-2.4
22	16:23			22.8		
	16:53	30	492	23.9	-1.1	-2.2
23	16:53			23.9		
	17:23	30	522	24.9	-1.0	-2.0
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

Average Infiltration Rate: 2.20 cm/hr
Infiltration Rate (account for lateral divergence): 1.60 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 3.31E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3A-5

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-5
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 12.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	09:31			21.3		
	09:36	5	5	19.7	1.6	19.2
2	09:36			19.7		
	09:41	5	10	19.1	0.6	7.2
3	09:41			19.1		
	09:51	10	20	17.9	1.2	7.2
4	09:51			17.9		
	10:01	10	30	16.7	1.2	7.2
5	10:01			16.7		
	10:11	10	40	15.7	1.0	6.0
6	10:11			15.7		
	10:21	10	50	14.8	0.9	5.4
7	10:21			14.8		
	10:31	10	60	13.9	0.9	5.4
8	10:31			13.9		
	10:41	10	70	13.1	0.8	4.8
9	10:41			13.1		
	10:51	10	80	12.3	0.8	4.8
10	10:51			12.3		
	11:01	10	90	11.6	0.7	4.2
11	11:01			11.6		
	11:21	20	110	10.3	1.3	3.9
12	11:21			10.3		
	11:41	20	130	9.1	1.2	3.6
13	11:41			9.1		
	12:01	20	150	8.0	1.1	3.3
14	12:01			8.0		
	12:21	20	170	6.9	1.1	3.3
15	12:21			6.9		
	12:41	20	190	5.9	1.0	3.0
16	12:41			5.9		
	13:01	20	210	5.0	0.9	2.7
17	13:01			5.0		
	13:21	20	230	4.2	0.8	2.4
18	13:35			22.0		
	13:55	20	264	19.8	2.2	6.6
19	13:55			19.8		
	14:15	20	284	18.0	1.8	5.4
20	14:15			18.0		
	14:35	20	304	16.3	1.7	5.1
21	14:35			16.3		
	14:55	20	324	14.9	1.4	4.2
22	14:55			14.9		
	15:15	20	344	13.5	1.4	4.2
23	15:15			13.5		
	15:35	20	364	12.3	1.2	3.6
24	15:35			12.3		
	16:05	30	394	10.5	1.8	3.6
25	16:05			10.5		
	16:35	30	424	8.8	1.7	3.4
26	16:35			8.8		
	17:05	30	454	7.3	1.5	3.0
27	17:05			7.3		
	17:35	30	484	5.8	1.5	3.0
28						
29						
30						
31						
32						
33						

Average Infiltration Rate: 3.13 cm/hr
Infiltration Rate (account for lateral divergence): 2.28 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.54E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3A-6

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-6
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 12.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	09:03			21.3		
	09:08	5	5	20.5	0.8	9.6
2	09:08			20.5		
	09:13	5	10	19.9	0.6	7.2
3	09:13			19.9		
	09:18	5	15	19.4	0.5	6.0
4	09:18			19.4		
	09:28	10	25	18.4	1.0	6.0
5	09:28			18.4		
	09:38	10	35	17.6	0.8	4.8
6	09:38			17.6		
	09:48	10	45	16.9	0.7	4.2
7	09:48			16.9		
	09:58	10	55	16.4	0.5	3.0
8	09:58			16.4		
	10:08	10	65	16.0	0.4	2.4
9	10:08			16.0		
	10:28	20	85	15.0	1.0	3.0
10	10:28			15.0		
	10:48	20	105	14.2	0.8	2.4
11	10:48			14.2		
	11:08	20	125	13.6	0.6	1.8
12	11:08			13.6		
	11:28	20	145	13.0	0.6	1.8
13	11:28			13.0		
	11:48	20	165	12.4	0.6	1.8
14	11:48			12.4		
	12:08	20	185	11.9	0.5	1.5
15	12:08			11.9		
	12:28	20	205	11.5	0.4	1.2
16	12:28			11.5		
	12:48	20	225	11.1	0.4	1.2
17	12:48			11.1		
	13:08	20	245	10.6	0.5	1.5
18	13:08			10.6		
	13:28	20	265	10.3	0.3	0.9
19	13:28			10.3		
	13:48	20	285	10.0	0.3	0.9
20	13:48			10.0		
	14:08	20	305	9.7	0.3	0.9
21	14:08			9.7		
	14:28	20	325	9.4	0.3	0.9
22	14:28			9.4		
	14:48	20	345	9.0	0.4	1.2
23	14:48			9.0		
	15:08	20	365	8.7	0.3	0.9
24	15:08			8.7		
	15:28	20	385	8.4	0.3	0.9
25	15:28			8.4		
	15:58	30	415	8.0	0.5	0.9
26	15:58			8.0		
	16:28	30	445	7.6	0.4	0.7
27	16:28			7.6		
	16:58	30	475	7.3	0.4	0.7
28	16:58			7.3		
	17:28	30	505	6.9	0.4	0.7
29						
30						
31						
32						
33						

Average Infiltration Rate: 0.70 cm/hr
Infiltration Rate (account for lateral divergence): 0.51 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.24E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3B-1

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-1
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 6.4 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	14:15			10.9		
	14:20	5	5	8.9	2.0	24.0
2	14:20			8.9		
	14:25	5	10	7.1	1.8	21.6
3	14:25			7.1		
	14:28	3	13	6.5	0.6	12.0
4	14:28			6.5		
	14:30	2	15	6.2	0.3	9.0
5	14:30			6.2		
	14:32	2	17	5.8	0.4	12.0
6	14:32			5.8		
	14:34	2	19	5.4	0.4	12.0
7	14:34			5.4		
	14:36	2	21	5.0	0.4	12.0
8	14:36			5.0		
	14:38	2	23	4.6	0.4	12.0
9	14:38			4.6		
	14:40	2	25	4.3	0.3	9.0
10	14:40			4.3		
	14:42	2	27	3.9	0.4	12.0
11	14:42			3.9		
	14:44	2	29	3.5	0.4	12.0
12	14:50			8.8		
	14:52	2	37	8.4	0.4	12.0
13	14:52			8.4		
	14:56	4	41	7.6	0.8	12.0
14	14:56			7.6		
	14:58	2	43	7.2	0.4	12.0
15	14:58			7.2		
	15:00	2	45	6.8	0.4	12.0
16						
17						
18						
19						
20						
21						
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Average Infiltration Rate: 12.00 cm/hr
Infiltration Rate (account for lateral divergence): 8.73 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 2.37E-03 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3B-2

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-2
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 9.8 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:42			14.0		
	11:52	10	10	13.3	0.7	4.2
2	11:52			13.3		
	12:22	30	40	11.7	1.6	3.2
3	12:22			11.7		
	12:52	30	70	10.3	1.4	2.8
4	12:52			10.3		
	13:22	30	100	9.1	1.2	2.4
5	13:22			9.1		
	13:52	30	130	8.1	1.0	2.0
6	13:52			8.1		
	14:22	30	160	7.1	1.0	2.0
7	14:22			7.1		
	14:52	30	190	6.1	1.0	2.0
8	14:52			6.1		
	15:22	30	220	5.5	0.6	1.2
9	15:22			14.4		
	15:52	30	250	13.2	1.2	2.4
10	15:52			13.2		
	16:22	30	280	11.7	1.5	3.0
11	16:22			11.7		
	16:52	30	310	10.5	1.2	2.4
12	16:52			10.5		
	17:22	30	340	9.5	1.0	2.0
13	17:22			9.5		
	17:52	30	370	8.4	1.1	2.2
14	17:52			8.4		
	18:22	30	400	7.4	1.0	2.0
15	18:22			7.4		
	18:52	30	430	6.5	0.9	1.8
16						
17						
18						
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20						
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29						
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31						
32						
33						

Average Infiltration Rate: 2.00 cm/hr
Infiltration Rate (account for lateral divergence): 1.46 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 3.72E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3B-3

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-3
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 6.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	17:20			9.3		
	17:25	5	5	7.4	1.9	22.8
2	17:25			7.4		
	17:30	5	10	6.0	1.4	16.8
3	17:30			6.0		
	17:35	5	15	4.6	1.4	16.8
4	17:45			13.7		
	17:50	5	30	11.8	1.9	22.8
5	17:50			11.8		
	17:55	5	35	10.1	1.7	20.4
6	17:55			10.1		
	18:00	5	40	8.7	1.4	16.8
7	18:00			8.7		
	18:05	5	45	7.5	1.2	14.4
8	18:05			7.5		
	18:10	5	50	6.3	1.2	14.4
9	18:10			6.3		
	18:15	5	55	5.1	1.2	14.4
10	18:15			5.1		
	18:20	5	60	3.9	1.2	14.4
11	18:30			9.1		
	18:35	5	75	7.8	1.3	15.6
12	18:35			7.8		
	18:40	5	80	6.7	1.1	13.2
13	18:40			6.7		
	18:45	5	85	5.6	1.1	13.2
14	18:45			5.6		
	18:50	5	90	4.8	0.8	9.6
15	18:50			4.8		
	18:55	5	95	4.2	0.6	7.2
16	18:55			4.2		
	19:00	5	100	3.5	0.7	8.4
17	19:00			3.5		
	19:05	5	105	2.8	0.7	8.4
18	19:05			2.8		
	19:10	5	110	2.0	0.8	9.6
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Average Infiltration Rate: 8.80 cm/hr
Infiltration Rate (account for lateral divergence): 6.40 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.73E-03 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3B-4

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-4
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 6.7 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:18			9.4		
	10:20	2	2	7.7	1.7	51.0
2	10:20			7.7		
	10:22	2	4	6.1	1.6	48.0
3	10:22			6.1		
	10:24	2	6	4.8	1.3	39.0
4	10:24			4.8		
	10:26	2	8	3.6	1.2	36.0
5	10:35			11.3		
	10:37	2	19	9.8	1.5	45.0
6	10:37			9.8		
	10:39	2	21	8.6	1.2	36.0
7	10:39			8.6		
	10:41	2	23	7.4	1.2	36.0
8	10:41			7.4		
	10:43	2	25	6.3	1.1	33.0
9	10:43			6.3		
	10:45	2	27	5.2	1.1	33.0
10	10:45			5.2		
	10:47	2	29	4.3	0.9	27.0
11	10:47			4.3		
	10:49	2	31	3.4	0.9	27.0
12	10:52			6.6		
	10:54	2	36	5.7	0.9	27.0
13	10:54			5.7		
	10:56	2	38	4.8	0.9	27.0
14	10:56			4.8		
	10:58	2	40	3.9	0.9	27.0
15	11:07			10.3		
	11:09	2	51	9.2	1.1	33.0
16	11:09			9.2		
	11:11	2	53	8.2	1.0	30.0
17	11:11			8.2		
	11:13	2	55	7.2	1.0	30.0
18	11:13			7.2		
	11:15	2	57	6.3	0.9	27.0
19	11:15			6.3		
	11:17	2	59	5.4	0.9	27.0
20	11:17			5.4		
	11:19	2	61	4.5	0.9	27.0
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Average Infiltration Rate: 27.00 cm/hr
Infiltration Rate (account for lateral divergence): 19.64 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.30E-03 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3B-5

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-5
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 11.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:37			17.5		
	10:42	5	5	16.8	0.7	8.4
2	10:42			16.8		
	10:47	5	10	16.3	0.5	6.0
3	10:47			16.3		
	10:57	10	20	15.7	0.6	3.6
4	10:57			15.7		
	11:17	20	40	14.7	1.0	3.0
5	11:17			14.7		
	11:37	20	60	14.0	0.7	2.1
6	11:37			14.0		
	11:57	20	80	13.3	0.7	2.1
7	11:57			13.3		
	12:17	20	100	12.8	0.5	1.5
8	12:17			12.8		
	12:37	20	120	12.3	0.5	1.5
9	12:37			12.3		
	12:57	20	140	11.7	0.6	1.8
10	12:57			11.7		
	13:17	20	160	11.2	0.5	1.5
11	13:17			11.2		
	13:37	20	180	10.9	0.3	0.9
12	13:37			10.9		
	13:57	20	200	10.5	0.4	1.2
13	13:57			10.5		
	14:17	20	220	10.2	0.3	0.9
14	14:17			10.2		
	14:37	20	240	9.8	0.4	1.2
15	14:37			9.8		
	14:57	20	260	9.5	0.3	0.9
16	14:57			9.5		
	15:17	20	280	9.1	0.4	1.2
17	15:17			9.1		
	15:37	20	300	8.8	0.3	0.9
18	15:37			8.8		
	16:07	30	330	8.4	0.4	0.8
19	16:07			8.4		
	16:37	30	360	8.0	0.4	0.8
20	16:37			8.0		
	17:07	30	390	7.6	0.4	0.8
21	17:07			7.6		
	17:37	30	420	7.2	0.4	0.8
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Average Infiltration Rate: 0.80 cm/hr
Infiltration Rate (account for lateral divergence): 0.58 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 1.44E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#3B-6

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-6
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 6.9 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:05			13.4		
	10:10	5	5	12.3	1.1	13.2
2	10:10			12.3		
	10:15	5	10	11.5	0.8	9.6
3	10:15			11.5		
	10:20	5	15	10.8	0.7	8.4
4	10:20			10.8		
	10:25	5	20	10.2	0.6	7.2
5	10:25			10.2		
	10:35	10	30	9.1	1.1	6.6
6	10:35			9.1		
	10:55	20	50	7.3	1.8	5.4
7	10:55			7.3		
	11:15	20	70	5.8	1.5	4.5
8	11:15			5.8		
	11:35	20	90	4.6	1.2	3.6
9	11:35			4.6		
	11:55	20	110	3.5	1.1	3.3
10	11:55			3.5		
	12:15	20	130	2.4	1.1	3.3
11	12:15			2.4		
	12:35	20	150	1.4	1.0	3.0
12	12:35			1.4		
	12:55	20	170	0.4	1.0	3.0
13	13:12			14.1		
	13:32	20	207	12.1	2.0	6.0
14	13:32			12.1		
	13:52	20	227	10.4	1.7	5.1
15	13:52			10.4		
	14:12	20	247	9.0	1.4	4.2
16	14:12			9.0		
	14:32	20	267	7.7	1.3	3.9
17	14:32			7.7		
	14:52	20	287	6.4	1.3	3.9
18	14:52			6.4		
	15:12	20	307	5.2	1.2	3.6
19	15:12			5.2		
	15:32	20	327	4.2	1.0	3.0
20	15:32			4.2		
	16:02	30	357	2.6	1.6	3.2
21	16:02			2.6		
	16:32	30	387	1.1	1.5	3.0
22	16:32			1.1		
	17:02	30	417	-0.2	1.3	2.6
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Average Infiltration Rate: 2.93 cm/hr
Infiltration Rate (account for lateral divergence): 2.13 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.73E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#4-1

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-1
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 15.4 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:10			18.2		
	10:15	5	5	17.6	0.6	7.2
2	10:15			17.6		
	10:20	5	10	17.1	0.5	6.0
3	10:20			17.1		
	10:30	10	20	16.4	0.7	4.2
4	10:30			16.4		
	10:50	20	40	16.3	0.1	0.3
5	10:50			16.3		
	11:10	20	60	16.1	0.2	0.6
6	11:10			16.1		
	11:30	20	80	15.9	0.2	0.6
7	11:30			15.9		
	11:50	20	100	15.6	0.3	0.9
8	11:50			15.6		
	12:10	20	120	15.4	0.2	0.6
9	12:10			15.4		
	12:30	20	140	15.2	0.2	0.6
10	12:30			15.2		
	12:50	20	160	15.1	0.1	0.3
11	12:50			15.1		
	13:10	20	180	15.0	0.1	0.3
12	13:10			15.0		
	13:30	20	200	14.9	0.1	0.3
13	13:30			14.9		
	13:50	20	220	14.8	0.1	0.3
14	13:50			14.8		
	14:10	20	240	14.7	0.1	0.3
15	14:10			14.7		
	14:30	20	260	14.6	0.1	0.3
16	14:30			14.6		
	14:50	20	280	14.5	0.1	0.3
17	14:50			14.5		
	15:10	20	300	14.4	0.1	0.3
18	15:10			14.4		
	15:30	20	320	14.3	0.1	0.3
19	15:30			14.3		
	15:50	20	340	14.2	0.1	0.3
20	15:50			14.2		
	16:10	20	360	14.1	0.1	0.3
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Average Infiltration Rate: 0.30 cm/hr
Infiltration Rate (account for lateral divergence): 0.22 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.10E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#4-2

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-2
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 11.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	10:37			14.2		
	10:42	5	5	13.7	0.5	6.0
2	10:42			13.7		
	10:52	10	15	13.3	0.4	2.4
3	10:52			13.3		
	11:12	20	35	12.8	0.5	1.5
4	11:12			12.8		
	11:32	20	55	12.6	0.2	0.6
5	11:32			12.6		
	11:52	20	75	12.3	0.3	0.9
6	11:52			12.3		
	12:12	20	95	12.2	0.1	0.3
7	12:12			12.2		
	12:32	20	115	12.0	0.2	0.6
8	12:32			12.0		
	12:52	20	135	11.8	0.2	0.6
9	12:52			11.8		
	13:12	20	155	11.6	0.2	0.6
10	13:12			11.6		
	13:32	20	175	11.4	0.2	0.6
11	13:32			11.4		
	13:52	20	195	11.3	0.1	0.3
12	13:52			11.3		
	14:12	20	215	11.2	0.1	0.3
13	14:12			11.2		
	14:32	20	235	11.1	0.1	0.3
14	14:32			11.1		
	14:52	20	255	11.0	0.1	0.3
15	14:52			11.0		
	15:12	20	275	10.8	0.2	0.6
16	15:12			10.8		
	15:32	20	295	10.6	0.2	0.6
17	15:32			10.6		
	15:52	20	315	10.5	0.1	0.3
18	15:52			10.5		
	16:12	20	335	10.4	0.1	0.3
19	16:12			10.4		
	16:32	20	355	10.2	0.2	0.6
20	16:32			10.2		
	16:52	20	375	10.1	0.1	0.3
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Average Infiltration Rate: 0.40 cm/hr
Infiltration Rate (account for lateral divergence): 0.29 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 7.21E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#4-3

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-3
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 15.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:09			17.8		
	11:14	5	5	17.2	0.6	7.2
2	11:14			17.2		
	11:24	10	15	16.2	1.0	6.0
3	11:24			16.2		
	11:34	10	25	15.3	0.9	5.4
4	11:34			15.3		
	11:54	20	45	13.9	1.4	4.2
5	11:54			13.9		
	12:14	20	65	12.7	1.2	3.6
6	12:14			12.7		
	12:34	20	85	11.7	1.0	3.0
7	12:34			11.7		
	12:54	20	105	10.9	0.8	2.4
8	12:54			10.9		
	13:14	20	125	10.1	0.8	2.4
9	13:14			10.1		
	13:34	20	145	9.5	0.6	1.8
10	13:34			9.5		
	13:54	20	165	8.9	0.6	1.8
11	14:04			20.6		
	14:14	10	185	20.3	0.3	1.8
12	14:14			20.3		
	14:34	20	205	19.7	0.6	1.8
13	14:34			19.7		
	14:54	20	225	19.2	0.5	1.5
14	14:54			19.2		
	15:14	20	245	18.6	0.6	1.8
15	15:14			18.6		
	15:34	20	265	18.1	0.5	1.5
16	15:34			18.1		
	15:54	20	285	17.6	0.5	1.5
17	15:54			17.6		
	16:14	20	305	17.1	0.5	1.5
18	16:14			17.1		
	16:34	20	325	16.5	0.6	1.8
19	16:34			16.5		
	16:54	20	345	16.0	0.5	1.5
20	16:54			16.0		
	17:14	20	365	15.5	0.5	1.5
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Average Infiltration Rate: 1.60 cm/hr
Infiltration Rate (account for lateral divergence): 1.16 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 2.71E-04 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#4-4

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-4
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 16.6 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	11:56			19.0		
	12:01	5	5	18.7	0.3	3.6
2	12:01			18.7		
	12:16	15	20	18.4	0.3	1.2
3	12:16			18.4		
	12:36	20	40	17.9	0.5	1.5
4	12:36			17.9		
	12:56	20	60	17.5	0.4	1.2
5	12:56			17.5		
	13:16	20	80	17.3	0.2	0.6
6	13:16			17.3		
	13:36	20	100	17.1	0.2	0.5
7	13:36			17.1		
	13:56	20	120	16.9	0.2	0.7
8	13:56			16.9		
	14:16	20	140	16.7	0.2	0.6
9	14:16			16.7		
	14:36	20	160	16.5	0.2	0.6
10	14:36			16.5		
	14:56	20	180	16.4	0.1	0.3
11	14:56			16.4		
	15:16	20	200	16.2	0.2	0.6
12	15:16			16.2		
	15:36	20	220	16.0	0.2	0.6
13	15:36			16.0		
	15:56	20	240	15.9	0.1	0.3
14	15:56			15.9		
	16:16	20	260	15.8	0.1	0.3
15	16:16			15.8		
	16:36	20	280	15.7	0.1	0.3
16	16:36			15.7		
	16:56	20	300	15.5	0.2	0.6
17	16:56			15.5		
	17:16	20	320	15.4	0.1	0.3
18	17:16			15.4		
	17:36	20	340	15.3	0.1	0.3
19	17:36			15.3		
	17:56	20	360	15.2	0.1	0.3
20	17:56			15.2		
	18:56	60	420	14.8	0.4	0.4
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Average Infiltration Rate: 0.33 cm/hr
Infiltration Rate (account for lateral divergence): 0.24 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.57E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#4-5

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-5
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 17.4 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	13:57			19.5		
	14:02	5	5	19.3	0.2	2.4
2	14:02			19.3		
	14:07	5	10	19.2	0.1	1.2
3	14:07			19.2		
	14:17	10	20	18.8	0.4	2.4
4	14:17			18.8		
	14:37	20	40	18.3	0.5	1.5
5	14:37			18.3		
	14:57	20	60	17.9	0.4	1.2
6	14:57			17.9		
	15:17	20	80	17.5	0.4	1.2
7	15:17			17.5		
	15:37	20	100	17.1	0.4	1.2
8	15:37			17.1		
	15:57	20	120	17.0	0.1	0.3
9	15:57			17.0		
	16:17	20	140	16.7	0.3	0.9
10	16:17			16.7		
	16:37	20	160	16.6	0.1	0.3
11	16:37			16.6		
	16:57	20	180	16.5	0.1	0.3
12	16:57			16.5		
	17:17	20	200	16.3	0.2	0.6
13	17:17			16.3		
	17:37	20	220	16.2	0.1	0.3
14	17:37			16.2		
	17:57	20	240	16.1	0.1	0.3
15	17:57			16.1		
	18:57	60	300	15.7	0.4	0.4
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

Average Infiltration Rate: 0.33 cm/hr
Infiltration Rate (account for lateral divergence): 0.24 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.50E-05 cm/sec

Single Ring Infiltrometer Calculation Sheet - CT#4-6

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-6
Operator: Karin Wagner

Inner Diameter of Ring: 58 cm
Inner Area of Ring: 2642.1 cm2
Lateral Divergence: 5 cm
Depth of Wetting Front: 55 cm
Water Entry Value: -1.5 cm
Average Depth of Water in Ring: 13.3 cm

No.	Time t	Δt	Time Elapsed	Water level	Change in Water Level	Infiltration Rate
	hh:mm	min	min	cm	cm	cm/hr
1	13:18			16.0		
	13:23	5	5	15.6	0.4	4.8
2	13:23			15.6		
	13:28	5	10	15.4	0.2	2.4
3	13:28			15.4		
	13:38	10	20	15.1	0.3	1.8
4	13:38			15.1		
	13:58	20	40	14.5	0.6	1.8
5	13:58			14.5		
	14:18	20	60	14.0	0.5	1.5
6	14:18			14.0		
	14:38	20	80	13.5	0.5	1.5
7	14:38			13.5		
	14:58	20	100	13.3	0.2	0.6
8	14:58			13.3		
	15:18	20	120	13.0	0.3	0.9
9	15:18			13.0		
	15:38	20	140	12.8	0.2	0.6
10	15:38			12.8		
	15:58	20	160	12.6	0.2	0.6
11	15:58			12.6		
	16:18	20	180	12.5	0.1	0.3
12	16:18			12.5		
	16:38	20	200	12.3	0.2	0.6
13	16:38			12.3		
	16:58	20	220	12.2	0.1	0.3
14	16:58			12.2		
	17:18	20	240	12.1	0.1	0.3
15	17:18			12.1		
	17:38	20	260	12.0	0.1	0.3
16	17:38			12.0		
	17:58	20	280	11.9	0.1	0.3
17	17:58			11.9		
	18:58	60	340	11.6	0.3	0.3
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

Average Infiltration Rate: 0.30 cm/hr
Infiltration Rate (account for lateral divergence): 0.22 cm/hr
Effective Saturated Hydraulic Conductivity K_{fs}: 5.27E-05 cm/sec

Appendix F
Guelph Permeameter Field Data Sheets

Guelph Infiltrometer Calculation Sheet - CT#1-1A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.1 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:03	-	3.0	-	-
2	09:05	2	5.3	2.3	1.15
3	09:07	2	7.7	2.4	1.20
4	09:09	2	9.7	2.0	1.00
5	09:11	2	11.8	2.1	1.05
6	09:13	2	14.2	2.4	1.20
7	09:15	2	16.9	2.7	1.35
8	09:17	2	19.9	3.0	1.50
9	09:19	2	23.0	3.1	1.55
10	09:21	2	25.6	2.6	1.30
11	09:23	2	28.0	2.4	1.20
12	09:25	2	30.3	2.3	1.15
13	09:27	2	32.5	2.2	1.10
14	09:29	2	35.5	3.0	1.50
15	09:31	2	37.4	1.9	0.95
16	09:33	2	39.8	2.4	1.20
17	09:35	2	42.5	2.7	1.35
18	09:37	2	43.9	1.4	0.70
19	09:42	5	48.6	4.7	0.94
20	09:47	5	53.7	5.1	1.02
21	09:52	5	59.9	6.2	1.24
22	09:58	6	66.0	6.1	1.02
23	10:03	5	70.9	4.9	0.98
24	10:08	5	75.6	4.7	0.94
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.98

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:13	-	1.8	-	-
2	10:15	2	5.6	3.8	1.90
3	10:17	2	10.0	4.4	2.20
4	10:19	2	14.5	4.5	2.25
5	10:21	2	19.0	4.5	2.25
6	10:23	2	23.6	4.6	2.30
7	10:25	2	28.3	4.7	2.35
8	10:27	2	33.3	5.0	2.50
9	10:29	2	38.0	4.7	2.35
10	10:31	2	42.5	4.5	2.25
11	10:33	2	47.1	4.6	2.30
12	10:35	2	51.6	4.5	2.25
13	10:37	2	55.6	4.0	2.00
14	10:39	2	60.0	4.4	2.20
15	10:41	2	64.4	4.4	2.20
16	10:43	2	68.9	4.5	2.25
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 2.22

Saturated Hydraulic Conductivity, K_s: 7.27E-03 cm/min or 1.21E-04 cm/sec
Matrix Flux Potential, Φ_m: -2.15E-02 cm^2/min or -3.59E-04 cm^2/sec
Alpha Parameter, α: -0.33806 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-1B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.1 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:01	-	3.6	-	-
2	11:06	5	3.6	0.0	0.00
3	11:08	2	4.5	0.9	0.45
4	11:13	5	5.5	1.0	0.20
5	11:23	10	8.1	2.6	0.26
6	11:33	10	10.6	2.5	0.25
7	11:43	10	13.2	2.6	0.26
8	11:53	10	15.7	2.5	0.25
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.25

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:45	-	9.0	-	-
2	11:50	5	22.7	13.7	2.74
3	11:52	2	28.1	5.4	2.70
4	11:54	2	32.9	4.8	2.40
5	11:56	2	36.5	3.6	1.80
6	12:00	4	44.3	7.8	1.95
7	12:02	2	48.9	4.6	2.30
8	12:04	2	53.3	4.4	2.20
9	12:06	2	57.8	4.5	2.25
10	12:08	2	61.9	4.1	2.05
11	12:10	2	65.9	4.0	2.00
12	12:12	2	69.4	3.5	1.75
13	12:14	2	73.9	4.5	2.25
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 2.01

Saturated Hydraulic Conductivity, K_s: 1.35E-02 cm/min or 2.25E-04 cm/sec
Matrix Flux Potential, Φ_m: -9.69E-02 cm^2/min or -1.61E-03 cm^2/sec
Alpha Parameter, α: -0.13947 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-1C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.4 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:21	-	13.2	-	-
2	12:23	2	15.8	2.6	1.30
3	12:25	2	17.6	1.8	0.90
4	12:27	2	19.5	1.9	0.95
5	12:29	2	21.1	1.6	0.80
6	12:31	2	22.8	1.7	0.85
7	12:33	2	24.3	1.5	0.75
8	12:35	2	25.6	1.3	0.65
9	12:37	2	26.9	1.3	0.65
10	12:39	2	28.2	1.3	0.65
11	12:41	2	29.4	1.2	0.60
12	12:43	2	30.6	1.2	0.60
13	12:45	2	31.8	1.2	0.60
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	0.60

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:45	-	9.0	-	-
2	11:50	5	22.7	13.7	2.74
3	11:52	2	28.1	5.4	2.70
4	11:54	2	32.9	4.8	2.40
5	11:56	2	36.5	3.6	1.80
6	12:00	4	44.3	7.8	1.95
7	12:02	2	48.9	4.6	2.30
8	12:04	2	53.3	4.4	2.20
9	12:06	2	57.8	4.5	2.25
10	12:08	2	61.9	4.1	2.05
11	12:10	2	65.9	4.0	2.00
12	12:12	2	69.4	3.5	1.75
13	12:14	2	73.9	4.5	2.25
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	2.01

Saturated Hydraulic Conductivity, K_s: 1.46E-01 cm/min or 2.44E-03 cm/sec
Matrix Flux Potential, Φ_m: -8.01E-01 cm^2/min or -1.34E-02 cm^2/sec
Alpha Parameter, α: -0.18275 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-1C(40)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.1 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 40 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:53	-	4.1	-	-
2	16:55	2	8.3	4.2	2.10
3	16:56	1	11.0	2.7	2.70
4	16:57	1	13.1	2.1	2.10
5	16:58	1	14.2	1.1	1.10
6	16:59	1	16.1	1.9	1.90
7	17:00	1	18.0	1.9	1.90
8	17:01	1	19.9	1.9	1.90
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.90

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:02	-	8.9	-	-
2	17:03	1	10.5	1.6	1.60
3	17:04	1	11.9	1.4	1.40
4	17:05	1	14.6	2.7	2.70
5	17:06	1	16.8	2.2	2.20
6	17:07	1	19.7	2.9	2.90
7	17:08	1	22.7	3.0	3.00
8	17:09	1	25.8	3.1	3.10
9	17:10	1	28.8	3.0	3.00
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.03

Saturated Hydraulic Conductivity, K_s: 3.86E-03 cm/min or 6.43E-05 cm/sec
Matrix Flux Potential, Φ_m: 3.88E-02 cm^2/min or 6.46E-04 cm^2/sec
Alpha Parameter, α: 0.099528 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-1C(60)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.1 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 60 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:31	-	3.1	-	-
2	16:36	5	3.1	0.0	0.00
3	16:41	5	3.1	0.0	0.00
4	16:46	5	3.1	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-1C(80)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.1 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 80 cm

H1: 5 cm -

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	07:42	-	1.1	-	
2	07:47	5	1.1	0.0	0.00
3	07:52	5	1.1	0.0	0.00
4	07:57	5	1.1	0.0	0.00
5	08:02	5	1.1	0.0	0.00
6	08:07	5	1.1	0.0	0.00
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-2A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-2A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:31	-	3.9	-	-
2	10:33	2	16.4	12.5	6.25
3	10:34	1	21.7	5.3	5.30
4	10:35	1	26.5	4.8	4.80
5	10:36	1	30.7	4.2	4.20
6	10:37	1	35.2	4.5	4.50
7	10:38	1	39.5	4.3	4.30
8	10:39	1	43.9	4.4	4.40
9	10:40	1	46.6	2.7	2.70
10	10:41	1	50.5	3.9	3.90
11	10:42	1	53.6	3.1	3.10
12	10:43	1	56.8	3.2	3.20
13	10:44	1	60.6	3.8	3.80
14	10:45	1	64.2	3.6	3.60
15	10:46	1	66.7	2.5	2.50
16	10:47	1	69.3	2.6	2.60
17	10:48	1	73.6	4.3	4.30
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 2.90

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:02	-	4.1	-	-
2	11:03	1	7.3	3.2	3.20
3	11:04	1	11.0	3.7	3.70
4	11:05	1	14.7	3.7	3.70
5	11:06	1	17.8	3.1	3.10
6	11:07	1	22.9	5.1	5.10
7	11:08	1	25.7	2.8	2.80
8	11:09	1	29.0	3.3	3.30
9	11:10	1	32.1	3.1	3.10
10	11:11	1	35.8	3.7	3.70
11	11:12	1	38.9	3.1	3.10
12	11:13	1	42.2	3.3	3.30
13	11:14	1	45.1	2.9	2.90
14	11:15	1	48.4	3.3	3.30
15	11:16	1	52.0	3.6	3.60
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 3.28

Saturated Hydraulic Conductivity, K_s: -5.06E-03 cm/min or -8.43E-05 cm/sec
Matrix Flux Potential, Φ_m: 1.45E-01 cm^2/min or 2.42E-03 cm^2/sec
Alpha Parameter, α: -0.03484 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-2B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:21	-	6.0	-	-
2	11:25	4	7.6	1.6	0.40
3	11:29	4	8.8	1.2	0.30
4	11:33	4	9.8	1.0	0.25
5	11:37	4	10.4	0.6	0.15
6	11:42	5	11.6	1.2	0.24
7	11:47	5	12.5	0.9	0.18
8	11:52	5	13.3	0.8	0.16
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.19

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:53	-	7.1	-	-
2	11:58	5	17.8	10.7	2.14
3	12:03	5	18.9	1.1	0.22
4	12:08	5	19.8	0.9	0.18
5	12:13	5	20.8	1.0	0.20
6	12:18	5	21.7	0.9	0.18
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.19

Saturated Hydraulic Conductivity, K_s: -9.81E-03 cm/min or -1.64E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.93E-01 cm^2/min or 3.22E-03 cm^2/sec
Alpha Parameter, α: -0.05075 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-2C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-2C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:24	-	2.3	-	-
2	12:29	5	2.3	0.0	0.00
3	12:34	5	2.3	0.0	0.00
4	12:39	5	2.3	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-3A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-3A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:31	-	3.4	-	-
2	13:35	4	8.3	4.9	1.23
3	13:39	4	13.6	5.3	1.33
4	13:43	4	19.5	5.9	1.48
5	13:47	4	24.4	4.9	1.23
6	13:51	4	29.2	4.8	1.20
7	13:55	4	34.1	4.9	1.23
8	13:59	4	38.9	4.8	1.20
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.21

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:03	-	10.6	-	-
2	14:07	4	29.1	18.5	4.63
3	14:08	1	34.7	5.6	5.60
4	14:09	1	40.7	6.0	6.00
5	14:10	1	46.8	6.1	6.10
6	14:11	1	53.2	6.4	6.40
7	14:12	1	60.2	7.0	7.00
8	14:13	1	67.5	7.3	7.30
9	14:14	1	75.0	7.5	7.50
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				7.27

Saturated Hydraulic Conductivity, K_s: 4.56E-02 cm/min or 7.60E-04 cm/sec
Matrix Flux Potential, Φ_m: -3.14E-01 cm^2/min or -5.24E-03 cm^2/sec
Alpha Parameter, α: -0.14517 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-3B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-3B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 4.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:21	-	7.2	-	-
2	14:22	1	13.5	6.3	6.30
3	14:23	1	23.2	9.7	9.70
4	14:24	1	31.2	8.0	8.00
5	14:25	1	38.5	7.3	7.30
6	14:26	1	43.2	4.7	4.70
7	14:27	1	46.4	3.2	3.20
8	14:28	1	51.7	5.3	5.30
9	14:29	1	58.4	6.7	6.70
10	14:30	1	63.4	5.0	5.00
11	14:31	1	69.5	6.1	6.10
12	14:32	1	74.3	4.8	4.80
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				4.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:35	-	8.0	-	-
2	14:36	1	25.5	17.5	17.50
3	14:37	1	32.3	6.8	6.80
4	14:37	0.5	39.4	7.1	14.20
5	14:38	0.5	48.5	9.1	18.20
6	14:38	0.5	56.8	8.3	16.60
7	14:39	0.5	63.5	6.7	13.40
8	14:39	0.5	71.2	7.7	15.40
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				15.13

Saturated Hydraulic Conductivity, K_s: 6.42E-02 cm/min or 1.07E-03 cm/sec
Matrix Flux Potential, Φ_m: -3.41E-01 cm^2/min or -5.68E-03 cm^2/sec
Alpha Parameter, α: -0.18847 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-3C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:45	-	6.8	-	-
2	14:46	1	11.2	4.4	4.40
3	14:47	1	16.2	5.0	5.00
4	14:48	1	21.2	5.0	5.00
5	14:49	1	24.3	3.1	3.10
6	14:50	1	29.1	4.8	4.80
7	14:51	1	32.8	3.7	3.70
8	14:52	1	37.4	4.6	4.60
9	14:53	1	40.2	2.8	2.80
10	14:54	1	46.0	5.8	5.80
11	14:55	1	49.7	3.7	3.70
12	14:56	1	53.4	3.7	3.70
13	14:57	1	57.1	3.7	3.70
14	14:58	1	60.6	3.5	3.50
15	14:59	1	64.6	4.0	4.00
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				3.73

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:02	-	3.5	-	-
2	15:02	0.5	12.7	9.2	18.40
3	15:03	0.5	20.8	8.1	16.20
4	15:03	0.5	29.1	8.3	16.60
5	15:04	0.5	36.5	7.4	14.80
6	15:04	0.5	44.8	8.3	16.60
7	15:05	0.5	51.3	6.5	13.00
8	15:05	0.5	59.7	8.4	16.80
9	15:06	0.5	66.6	6.9	13.80
10	15:06	0.5	74.2	7.6	15.20
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				15.27

Saturated Hydraulic Conductivity, K_s: 8.28E-02 cm/min or 1.38E-03 cm/sec
Matrix Flux Potential, Φ_m: -5.14E-01 cm^2/min or -8.57E-03 cm^2/sec
Alpha Parameter, α: -0.16097 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-4A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:44	-	9.9	-	-
2	08:46	2	14.4	4.5	2.25
3	08:48	2	18.5	4.1	2.05
4	08:50	2	22.4	3.9	1.95
5	08:52	2	25.9	3.5	1.75
6	08:54	2	29.7	3.8	1.90
7	08:56	2	33.4	3.7	1.85
8	08:58	2	36.9	3.5	1.75
9	09:00	2	40.4	3.5	1.75
10	09:02	2	43.9	3.5	1.75
11	09:04	2	47.4	3.5	1.75
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.75

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:07	-	5.5	-	
2	09:08	1	9.3	3.8	3.80
3	09:09	1	12.9	3.6	3.60
4	09:10	1	16.5	3.6	3.60
5	09:11	1	20.1	3.6	3.60
6	09:12	1	23.8	3.7	3.70
7	09:13	1	27.4	3.6	3.60
8	09:14	1	31.1	3.7	3.70
9	09:15	1	34.7	3.6	3.60
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.63

Saturated Hydraulic Conductivity, K_s: 1.71E-01 cm/min or 2.85E-03 cm/sec
Matrix Flux Potential, Φ_m: -2.90E-01 cm^2/min or -4.84E-03 cm^2/sec
Alpha Parameter, α: -0.58904 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-4A(40)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 40 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:46	-	4.7	-	-
2	16:50	4	4.7	0.0	0.00
3	16:55	5	4.7	0.0	0.00
4	17:00	5	4.8	0.1	0.02
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.01

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-4A(60)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 60 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:48	-	0.4	-	-
2	17:58	10	0.4	0.0	0.00
3	18:08	10	0.4	0.0	0.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-4A(80)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 80 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:40	-	0.5	-	-
2	09:50	10	0.5	0.0	0.00
3	10:00	10	0.5	0.0	0.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-4B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:22	-	4.1	-	-
2	09:24	2	8.7	4.6	2.30
3	09:26	2	12.9	4.2	2.10
4	09:28	2	16.4	3.5	1.75
5	09:30	2	19.7	3.3	1.65
6	09:32	2	23.0	3.3	1.65
7	09:34	2	26.5	3.5	1.75
8	09:36	2	29.6	3.1	1.55
9	09:38	2	31.7	2.1	1.05
10	09:40	2	34.5	2.8	1.40
11	09:42	2	37.4	2.9	1.45
12	09:44	2	39.1	1.7	0.85
13	09:46	2	42.2	3.1	1.55
14	09:48	2	44.7	2.5	1.25
15	09:50	2	46.8	2.1	1.05
16	09:52	2	49.0	2.2	1.10
17	09:54	2	52.2	3.2	1.60
18	09:56	2	53.3	1.1	0.55
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.18

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:59	-	4.1	-	
2	10:00	1	9.7	5.6	5.60
3	10:01	1	13.7	4.0	4.00
4	10:02	1	17.1	3.4	3.40
5	10:03	1	20.5	3.4	3.40
6	10:04	1	24.1	3.6	3.60
7	10:05	1	27.8	3.7	3.70
8	10:06	1	31.2	3.4	3.40
9	10:07	1	34.2	3.0	3.00
10	10:08	1	37.9	3.7	3.70
11	10:09	1	41.2	3.3	3.30
12	10:10	1	44.5	3.3	3.30
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.33

Saturated Hydraulic Conductivity, K_s: 1.40E-02 cm/min or 2.34E-04 cm/sec
Matrix Flux Potential, Φ_m: -6.70E-02 cm^2/min or -1.12E-03 cm^2/sec
Alpha Parameter, α: -0.20919 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-4C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-4C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:16	-	2.9	-	-
2	10:21	5	2.9	0.0	0.00
3	10:26	5	2.9	0.0	0.00
4	10:31	5	2.9	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-5A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:19	-	3.1	-	-
2	15:20	1	8.4	5.3	5.30
3	15:21	1	12.5	4.1	4.10
4	15:22	1	16.2	3.7	3.70
5	15:23	1	19.2	3.0	3.00
6	15:24	1	22.6	3.4	3.40
7	15:25	1	25.5	2.9	2.90
8	15:26	1	27.7	2.2	2.20
9	15:27	1	30.0	2.3	2.30
10	15:28	1	31.8	1.8	1.80
11	15:29	1	34.5	2.7	2.70
12	15:30	1	37.1	2.6	2.60
13	15:31	1	39.6	2.5	2.50
14	15:32	1	40.8	1.2	1.20
15	15:33	1	42.6	1.8	1.80
16	15:34	1	44.7	2.1	2.10
17	15:35	1	46.2	1.5	1.50
18	15:36	1	48.0	1.8	1.80
19	15:37	1	50.0	2.0	2.00
20	15:38	1	51.9	1.9	1.90
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.90

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:39	-		-	
2	15:40	1		0.0	0.00
3	15:41	1	19.1	19.1	19.10
4	15:42	1	23.1	4.0	4.00
5	15:43	1	27.3	4.2	4.20
6	15:44	1	31.8	4.5	4.50
7	15:45	1	35.4	3.6	3.60
8	15:46	1	39.5	4.1	4.10
9	15:47	1	43.9	4.4	4.40
10	15:48	1	48.1	4.2	4.20
11	15:49	1	52.2	4.1	4.10
12	15:50	1	56.6	4.4	4.40
13	15:51	1	60.6	4.0	4.00
14	15:52	1	64.8	4.2	4.20
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.18

Saturated Hydraulic Conductivity, K_s: 1.31E-02 cm/min or 2.18E-04 cm/sec
Matrix Flux Potential, Φ_m: -3.37E-02 cm^2/min or -5.61E-04 cm^2/sec
Alpha Parameter, α: -0.38869 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-5A(40)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 40 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:34	-	3.8	-	-
2	16:39	5	3.8	0.0	0.00
3	16:44	5	3.8	0.0	0.00
4	16:49	5	3.8	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-5A(60)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 60 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:03	-	0.4	-	-
2	17:05	2	5.7	5.3	2.65
3	17:07	2	8.4	2.7	1.35
4	17:09	2	9.9	1.5	0.75
5	17:11	2	11.1	1.2	0.60
6	17:13	2	11.8	0.7	0.35
7	17:15	2	12.2	0.4	0.20
8	17:17	2	12.8	0.6	0.30
9	17:19	2	13.0	0.2	0.10
10	17:21	2	13.0	0.0	0.00
11	17:23	2	13.0	0.0	0.00
12	17:25	2	13.0	0.0	0.00
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:27		4.2	-	
2	17:03	4	4.6	0.4	0.10
3	17:07	4	5.0	0.4	0.10
4	17:11	4	5.4	0.4	0.10
5	17:15	4	5.4	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-5A(80)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 80 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	07:16	-	0.5	-	-
2	07:21	5	0.5	0.0	0.00
3	07:26	5	0.5	0.0	0.00
4	07:31	5	0.5	0.0	0.00
5	07:36	5	0.5	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-5B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 80 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:00	-	7.4	-	-
2	16:05	5	7.4	0.0	0.00
3	16:10	5	7.4	0.0	0.00
4	16:15	5	7.4	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-5C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-5C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 80 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:18	-	2.5	-	-
2	16:23	5	2.5	0.0	0.00
3	16:28	5	2.5	0.0	0.00
4	16:33	5	2.5	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-6A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-6A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 80 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:22	-	4.4	-	-
2	17:27	5	4.4	0.0	0.00
3	17:32	5	4.4	0.0	0.00
4	17:37	5	4.4	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-6B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	07:24	-	0.6	-	-
2	07:29	5	3.9	3.3	0.66
3	07:34	5	6.3	2.4	0.48
4	07:39	5	9.3	3.0	0.60
5	07:44	5	12.3	3.0	0.60
6	07:49	5	14.9	2.6	0.52
7	07:54	5	17.5	2.6	0.52
8	07:59	5	20.1	2.6	0.52
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.52

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	08:01	-	5.5	-	-
2	08:02	1	8.8	3.3	3.30
3	08:03	1	11.9	3.1	3.10
4	08:04	1	15.4	3.5	3.50
5	08:05	1	18.9	3.5	3.50
6	08:06	1	22.4	3.5	3.50
7	08:07	1	25.8	3.4	3.40
8	08:08	1	29.3	3.5	3.50
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.47

Saturated Hydraulic Conductivity, K_s: 2.24E-02 cm/min or 3.73E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.57E-01 cm^2/min or -2.61E-03 cm^2/sec
Alpha Parameter, α: -0.14272 1/cm

Guelph Infiltrometer Calculation Sheet - CT#1-6C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#1-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:14	-	2.2	-	-
2	08:19	5	2.2	0.0	0.00
3	08:24	5	2.2	0.0	0.00
4	08:29	5	2.2	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-1A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-1A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:10	-	32.0	-	-
2	16:11	1	32.3	0.3	0.30
3	16:12	1	32.6	0.3	0.30
4	16:13	1	33.0	0.4	0.40
5	16:14	1	33.3	0.3	0.30
6	16:15	1	33.6	0.3	0.30
7	16:16	1	33.9	0.3	0.30
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.30

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	16:21	-	6.5	-	-
2	16:22	1	9.4	2.9	2.90
3	16:23	1	12.8	3.4	3.40
4	16:24	1	15.2	2.4	2.40
5	16:25	1	18.5	3.3	3.30
6	16:26	1	22.0	3.5	3.50
7	16:27	1	25.5	3.5	3.50
8	16:28	1	28.8	3.3	3.30
9	16:29	1	31.7	2.9	2.90
10	16:30	1	34.5	2.8	2.80
11	16:31	1	37.2	2.7	2.70
12	16:32	1	39.9	2.7	2.70
13	16:33	1	42.5	2.6	2.60
14	16:34	1	45.1	2.6	2.60
15	16:35	1	47.7	2.6	2.60
16	16:36	1	50.3	2.6	2.60
17	16:37	1	53.0	2.7	2.70
18	16:38	1	55.6	2.6	2.60
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.65

Saturated Hydraulic Conductivity, K_s: 1.92E-02 cm/min or 3.20E-04 cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: -1.50E-01 cm^2/min or -2.50E-03 cm^2/sec
Alpha Parameter, α: -0.12821 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-1B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-1B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:54	-	13.1	-	-
2	16:56	2	13.7	0.6	0.30
3	16:58	2	14.2	0.5	0.25
4	17:00	2	14.7	0.5	0.25
5	17:02	2	15.2	0.5	0.25
6	17:04	2	15.6	0.4	0.20
7	17:06	2	16.0	0.4	0.20
8	17:08	2	16.4	0.4	0.20
9	17:10	2	16.8	0.4	0.20
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.22

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:16	-	5.4	-	-
2	17:17	1	9.3	3.9	3.90
3	17:18	1	10.9	1.6	1.60
4	17:19	1	12.1	1.2	1.20
5	17:20	1	13.1	1.0	1.00
6	17:21	1	14.1	1.0	1.00
7	17:22	1	15.1	1.0	1.00
8	17:23	1	16.0	0.9	0.90
9	17:24	1	16.7	0.7	0.70
10	17:25	1	17.6	0.9	0.90
11	17:26	1	18.5	0.9	0.90
12	17:27	1	19.2	0.7	0.70
13	17:28	1	20.3	1.1	1.10
14	17:29	1	21.2	0.9	0.90
15	17:30	1	21.9	0.7	0.70
16	17:31	1	22.7	0.8	0.80
17	17:32	1	23.5	0.8	0.80
18	17:33	1	24.3	0.8	0.80
19	17:34	1	25.2	0.9	0.90
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.83

Saturated Hydraulic Conductivity, K_s: 4.56E-03 cm/min or 7.60E-05 cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: -3.08E-02 cm^2/min or -5.13E-04 cm^2/sec
Alpha Parameter, α: -0.14823 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-1C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:20	-	24.9	-	-
2	10:30	10	24.9	0.0	0.00
3	10:40	10	24.9	0.0	0.00
4	10:50	10	24.9	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-2A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-2A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	18:35	-	26.0	-	-
2	18:40	5	26.0	0.0	0.00
3	18:45	5	26.0	0.0	0.00
4	18:50	5	26.0	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-2B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	18:50	-	28.0	-	-
2	18:55	5	28.0	0.0	0.00
3	19:00	5	28.0	0.0	0.00
4	19:05	5	28.0	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-2C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-2C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	20:10	-	16.0	-	-
2	20:15	5	18.0	2.0	0.40
3	20:20	5	19.8	1.8	0.36
4	20:25	5	21.5	1.7	0.34
5	20:30	5	23.7	2.2	0.44
6	20:40	10	23.7	0.0	0.00
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-3A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-3A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:40	-	6.7	-	-
2	17:45	5	6.7	0.0	0.00
3	17:50	5	6.7	0.0	0.00
4	17:55	5	6.7	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-3C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 17 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	18:20	-	9.0	-	-
2	18:25	5	9.0	0.0	0.00
3	18:30	5	9.0	0.0	0.00
4	18:35	5	9.0	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-3B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-3B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:51	-	3.0	-	-
2	17:53	2	5.5	2.5	1.25
3	17:54	1	7.2	1.7	1.70
4	17:55	1	8.8	1.6	1.60
5	17:56	1	10.3	1.5	1.50
6	17:57	1	11.7	1.4	1.40
7	17:58	1	13.0	1.3	1.30
8	17:59	1	15.2	2.2	2.20
9	18:00	1	16.4	1.2	1.20
10	18:01	1	17.7	1.3	1.30
11	18:02	1	18.9	1.2	1.20
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.23

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	18:09	-	13.8	-	-
2	18:09	0.5	17.6	3.8	7.60
3	18:10	0.5	20.9	3.3	6.60
4	18:10	0.5	24.5	3.6	7.20
5	18:11	0.5	28.0	3.5	7.00
6	18:11	0.5	31.6	3.6	7.20
7	18:12	0.5	35.4	3.8	7.60
8	18:12	0.5	38.7	3.3	6.60
9	18:13	0.5	42.0	3.3	6.60
10	18:13	0.5	45.2	3.2	6.40
11	18:14	0.5	48.5	3.3	6.60
12	18:14	0.5	51.9	3.4	6.80
13	18:15	0.5	55.2	3.3	6.60
14	18:15	0.5	58.6	3.4	6.80
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				6.73

Saturated Hydraulic Conductivity, K_s: 4.31E-02 cm/min or 7.19E-04 cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: -3.18E-01 cm^2/min or -5.30E-03 cm^2/sec
Alpha Parameter, α: -0.13567 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-4A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 17 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:55	-	31.0	-	-
2	11:05	10	31.0	0.0	0.00
3	11:15	10	31.0	0.0	0.00
4	11:25	10	31.0	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-4B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-4B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 17 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:30	-	2.9	-	-
2	11:31	1	3.0	0.1	0.10
3	11:32	1	3.0	0.0	0.00
4	11:37	5	3.0	0.0	0.00
5	11:47	10	3.0	0.0	0.00
6	11:57	10	3.0	0.0	0.00
7	12:07	10	3.0	0.0	0.00
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-4C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-4C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:10	-	11.3	-	-
2	12:15	5	13.1	1.8	0.36
3	12:20	5	15.2	2.1	0.42
4	12:22	2	15.9	0.7	0.35
5	12:24	2	16.7	0.8	0.40
6	12:26	2	17.5	0.8	0.40
7	12:28	2	18.3	0.8	0.40
8	12:30	2	19.1	0.8	0.40
9	12:32	2	19.9	0.8	0.40
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:34	-	15.6	-	-
2	12:35	1	19.5	3.9	3.90
3	12:36	1	24.4	4.9	4.90
4	12:37	1	28.1	3.7	3.70
5	12:38	1	31.8	3.7	3.70
6	12:39	1	35.6	3.8	3.80
7	12:40	1	38.8	3.2	3.20
8	12:41	1	42.0	3.2	3.20
9	12:42	1	45.2	3.2	3.20
10	12:43	1	47.4	2.2	2.20
11	12:44	1	50.6	3.2	3.20
12	12:45	1	53.8	3.2	3.20
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.87

Saturated Hydraulic Conductivity, K_s: 1.99E-02 cm/min or 3.31E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.52E-01 cm^2/min or -2.53E-03 cm^2/sec
Alpha Parameter, α: -0.13071 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-5A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:35	-	9.8	-	-
2	08:45	10	9.8	0.0	0.00
3	08:55	10	9.8	0.0	0.00
4	09:05	10	9.8	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-5B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-5B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 22 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:10	-	16.2	-	-
2	09:20	10	16.2	0.0	0.00
3	09:30	10	16.2	0.0	0.00
4	09:40	10	16.2	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-5C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-5C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 22 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:45	-	19.2	-	-
2	09:55	10	19.2	0.0	0.00
3	10:05	10	19.2	0.0	0.00
4	10:15	10	19.2	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-6A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-6A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:20	-	18.3	-	-
2	16:30	10	18.3	0.0	0.00
3	16:40	10	18.3	0.0	0.00
4	16:50	10	18.3	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-6B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:00	-	24.5	-	-
2	17:10	10	24.5	0.0	0.00
3	17:20	10	24.5	0.0	0.00
4	17:30	10	24.5	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2A-6C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2A-6C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:40	-	30.6	-	-
2	17:50	10	30.6	0.0	0.00
3	17:55	5	38.6	8.0	1.60
4	17:56	1	40.0	1.4	1.40
5	17:57	1	41.2	1.2	1.20
6	17:58	1	42.8	1.6	1.60
7	17:59	1	44.8	2.0	2.00
8	18:00	1	46.6	1.8	1.80
9	18:01	1	48.2	1.6	1.60
10	18:02	1	49.3	1.1	1.10
11	18:03	1	50.5	1.2	1.20
12	18:04	1	51.4	0.9	0.90
13	18:05	1	52.3	0.9	0.90
14	18:06	1	53.2	0.9	0.90
15	18:07	1	54.1	0.9	0.90
16	18:08	1	55.0	0.9	0.90
17	18:09	1	55.9	0.9	0.90
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.90

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	18:10	-	34.3	-	-
2	18:15	5	34.3	0.0	0.00
3	18:20	5	38.2	3.9	0.78
4	18:21	1	39.1	0.9	0.90
5	18:22	1	39.8	0.7	0.70
6	18:23	1	41.0	1.2	1.20
7	18:24	1	42.2	1.2	1.20
8	18:25	1	43.4	1.2	1.20
9	18:26	1	44.6	1.2	1.20
10	18:27	1	45.8	1.2	1.20
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 1.20

Saturated Hydraulic Conductivity, K_s: -5.56E-04 cm/min or -9.26E-06 cm/sec
Matrix Flux Potential, Φ_m: 3.44E-02 cm^2/min or 5.73E-04 cm^2/sec
Alpha Parameter, α: -0.01618 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-1A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-1A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 17 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:19	-	10.6	-	-
2	13:19	0.5	12.3	1.7	3.40
3	13:20	0.5	14.2	1.9	3.80
4	13:20	0.5	15.9	1.7	3.40
5	13:21	0.5	18.5	2.6	5.20
6	13:21	0.5	21.0	2.5	5.00
7	13:22	0.5	23.3	2.3	4.60
8	13:22	0.5	25.7	2.4	4.80
9	13:23	0.5	27.9	2.2	4.40
10	13:23	0.5	29.6	1.7	3.40
11	13:24	0.5	31.1	1.5	3.00
12	13:24	0.5	32.6	1.5	3.00
13	13:25	0.5	33.9	1.3	2.60
14	13:25	0.5	35.4	1.5	3.00
15	13:26	0.5	37.0	1.6	3.20
16	13:26	0.5	38.5	1.5	3.00
17	13:27	0.5	40.0	1.5	3.00
18	13:27	0.5	41.5	1.5	3.00
19	13:28	0.5	43.0	1.5	3.00
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				3.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:40	-	7.2	-	-
2	13:40	0.5	8.2	1.0	2.00
3	13:41	0.5	9.6	1.4	2.80
4	13:41	0.5	10.7	1.1	2.20
5	13:42	0.5	11.8	1.1	2.20
6	13:42	0.5	12.5	0.7	1.40
7	13:43	0.5	13.6	1.1	2.20
8	13:43	0.5	14.8	1.2	2.40
9	13:44	0.5	15.9	1.1	2.20
10	13:44	0.5	17.0	1.1	2.20
11	13:45	0.5	18.1	1.1	2.20
12	13:45	0.5	19.1	1.0	2.00
13	13:46	0.5	20.2	1.1	2.20
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.13

Saturated Hydraulic Conductivity, K_s: -1.79E-02 cm/min or -2.99E-04 cm/sec
Matrix Flux Potential, Φ_m: 2.48E-01 cm^2/min or 4.14E-03 cm^2/sec
Alpha Parameter, α: -0.07227 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-1B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-1B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:58	-	3.8	-	-
2	13:59	1	4.1	0.3	0.30
3	14:00	1	4.3	0.2	0.20
4	14:05	5	4.9	0.6	0.12
5	14:10	5	5.3	0.4	0.08
6	14:15	5	5.6	0.3	0.06
7	14:20	5	6.0	0.4	0.08
8	14:25	5	6.4	0.4	0.08
9	14:30	5	6.8	0.4	0.08
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.08

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:33	-	8.8	-	-
2	14:33	0.5	9.5	0.7	1.40
3	14:34	0.5	10.2	0.7	1.40
4	14:34	0.5	11.0	0.8	1.60
5	14:35	0.5	11.8	0.8	1.60
6	14:35	0.5	12.8	1.0	2.00
7	14:36	0.5	13.9	1.1	2.20
8	14:36	0.5	14.6	0.7	1.40
9	14:37	0.5	15.5	0.9	1.80
10	14:37	0.5	16.3	0.8	1.60
11	14:38	0.5	17.0	0.7	1.40
12	14:38	0.5	17.7	0.7	1.40
13	14:39	0.5	18.5	0.8	1.60
14	14:39	0.5	19.3	0.8	1.60
15	14:40	0.5	20.0	0.7	1.40
16	14:40	0.5	20.8	0.8	1.60
17	14:41	0.5	21.7	0.9	1.80
18	14:41	0.5	22.6	0.9	1.80
19	14:42	0.5	23.5	0.9	1.80
20	14:42	0.5	24.4	0.9	1.80
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.80

Saturated Hydraulic Conductivity, K_s: 1.37E-02 cm/min or 2.28E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.05E-01 cm^2/min or -1.74E-03 cm^2/sec
Alpha Parameter, α: -0.1309 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-1C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:50	-	2.3	-	-
2	14:51	1	2.8	0.5	0.50
3	14:52	1	3.3	0.5	0.50
4	14:53	1	3.9	0.6	0.60
5	14:54	1	5.0	1.1	1.10
6	14:55	1	6.2	1.2	1.20
7	14:56	1	7.5	1.3	1.30
8	14:57	1	8.8	1.3	1.30
9	14:58	1	10.1	1.3	1.30
10	14:59	1	11.4	1.3	1.30
11	15:00	1	12.7	1.3	1.30
12	15:01	1	14.0	1.3	1.30
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.30

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:04	-	9.5	-	-
2	15:05	1	12.9	3.4	3.40
3	15:06	1	15.9	3.0	3.00
4	15:07	1	20.5	4.6	4.60
5	15:08	1	25.0	4.5	4.50
6	15:09	1	30.1	5.1	5.10
7	15:10	1	35.2	5.1	5.10
8	15:11	1	40.3	5.1	5.10
9	15:12	1	45.0	4.7	4.70
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.97

Saturated Hydraulic Conductivity, K_s: 2.60E-02 cm/min or 4.34E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.57E-01 cm^2/min or -2.62E-03 cm^2/sec
Alpha Parameter, α: -0.16572 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-2A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-2A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:57	-	4.7	-	-
2	08:58	1	5.0	0.3	0.30
3	08:59	1	5.3	0.3	0.30
4	09:00	1	5.4	0.1	0.10
5	09:05	5	5.7	0.3	0.06
6	09:10	5	6.0	0.3	0.06
7	09:15	5	6.3	0.3	0.06
8	09:20	5	6.5	0.2	0.04
9	09:25	5	6.7	0.2	0.04
10	09:30	5	6.9	0.2	0.04
11	09:35	5	7.1	0.2	0.04
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.04

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:47	-	4.3	-	-
2	09:47	0.5	5.3	1.0	2.00
3	09:48	0.5	6.3	1.0	2.00
4	09:49	1	8.2	1.9	1.90
5	09:49	0.5	9.2	1.0	2.00
6	09:50	0.5	10.1	0.9	1.80
7	09:50	0.5	11.0	0.9	1.80
8	09:52	1.5	12.5	1.5	1.00
9	09:53	1	13.7	1.2	1.20
10	09:53	0.5	14.6	0.9	1.80
11	09:54	0.5	15.3	0.7	1.40
12	09:55	1	16.5	1.2	1.20
13	09:56	1	17.9	1.4	1.40
14	09:57	1	19.3	1.4	1.40
15	09:58	1	20.8	1.5	1.50
16	09:59	1	22.2	1.4	1.40
17	10:00	1	23.6	1.4	1.40
18	10:01	1	25.0	1.4	1.40
19	10:02	1	26.4	1.4	1.40
20	10:03	1	27.8	1.4	1.40
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.40

Saturated Hydraulic Conductivity, K_s: 1.09E-02 cm/min or 1.81E-04 cm/sec
Matrix Flux Potential, Φ_m: -8.40E-02 cm^2/min or -1.40E-03 cm^2/sec
Alpha Parameter, α: -0.12956 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-2B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:08	-	3.5	-	-
2	10:09	1	6.1	2.6	2.60
3	10:10	1	8.8	2.7	2.70
4	10:11	1	11.0	2.2	2.20
5	10:12	1	13.2	2.2	2.20
6	10:13	1	15.3	2.1	2.10
7	10:14	1	17.4	2.1	2.10
8	10:15	1	19.3	1.9	1.90
9	10:16	1	20.4	1.1	1.10
10	10:17	1	21.4	1.0	1.00
11	10:18	1	22.5	1.1	1.10
12	10:19	1	23.6	1.1	1.10
13	10:20	1	25.0	1.4	1.40
14	10:21	1	27.0	2.0	2.00
15	10:22	1	29.2	2.2	2.20
16	10:23	1	31.0	1.8	1.80
17	10:24	1	32.3	1.3	1.30
18	10:25	1	33.8	1.5	1.50
19	10:26	1	35.3	1.5	1.50
20	10:27	1	36.2	0.9	0.90
21	10:28	1	37.2	1.0	1.00
22	10:29	1	38.2	1.0	1.00
23	10:30	1	39.2	1.0	1.00
24	10:31	1	40.2	1.0	1.00
25	10:32	1	41.2	1.0	1.00
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:40	-	7.6	-	-
2	10:41	1	8.9	1.3	1.30
3	10:42	1	10.8	1.9	1.90
4	10:43	1	12.4	1.6	1.60
5	10:44	1	14.3	1.9	1.90
6	10:45	1	16.4	2.1	2.10
7	10:46	1	18.4	2.0	2.00
8	10:47	1	20.5	2.1	2.10
9	10:48	1	22.5	2.0	2.00
10	10:49	1	24.6	2.1	2.10
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.07

Saturated Hydraulic Conductivity, K_s: 5.83E-03 cm/min or 9.72E-05 cm/sec
Matrix Flux Potential, Φ_m: -9.43E-03 cm^2/min or -1.57E-04 cm^2/sec
Alpha Parameter, α: -0.61864 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-2C(1)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-2C(1)
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:58	-	3.0	-	-
2	11:03	5	3.0	0.0	0.00
3	11:08	5	3.0	0.0	0.00
4	11:13	5	3.0	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-2C(2)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-2C(2)
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:05	-	5.1	-	-
2	12:10	5	5.1	0.0	0.00
3	12:15	5	5.1	0.0	0.00
4	12:20	5	5.1	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-3A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-3A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:11	-	3.4	-	-
2	16:21	10	3.4	0.0	0.00
3	16:31	10	3.4	0.0	0.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-3B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-3B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 21 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:32	-	8.0	-	-
2	16:42	10	8.0	0.0	0.00
3	16:47	5	11.0	3.0	0.60
4	16:49	2	11.8	0.8	0.40
5	16:51	2	12.3	0.5	0.25
6	16:53	2	13.3	1.0	0.50
7	16:55	2	14.3	1.0	0.50
8	16:57	2	15.2	0.9	0.45
9	16:59	2	16.1	0.9	0.45
10	17:01	2	17.0	0.9	0.45
11	17:03	2	17.9	0.9	0.45
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.45

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:04	-	13.5	-	-
2	17:09	5	13.5	0.0	0.00
3	17:11	2	14.6	1.1	0.55
4	17:13	2	16.2	1.6	0.80
5	17:15	2	17.7	1.5	0.75
6	17:17	2	19.2	1.5	0.75
7	17:19	2	20.7	1.5	0.75
8	17:21	2	22.2	1.5	0.75
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.75

Saturated Hydraulic Conductivity, K_s: 1.17E-03 cm/min or 1.95E-05 cm/sec
Matrix Flux Potential, Φ_m: 7.18E-03 cm^2/min or 1.20E-04 cm^2/sec
Alpha Parameter, α: 0.162845 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-3C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:28	-	7.2	-	-
2	17:38	10	7.2	0.0	0.00
3	17:48	10	7.2	0.0	0.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-4A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 19 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:20	-	7.2	-	-
2	11:21	1	11.4	4.2	4.20
3	11:22	1	15.6	4.2	4.20
4	11:23	1	19.9	4.3	4.30
5	11:24	1	26.1	6.2	6.20
6	11:25	1	32.2	6.1	6.10
7	11:26	1	37.5	5.3	5.30
8	11:27	1	43.3	5.8	5.80
9	11:27	0.5	46.3	3.0	6.00
10	11:28	0.5	48.5	2.2	4.40
11	11:28	0.5	51.2	2.7	5.40
12	11:29	0.5	53.1	1.9	3.80
13	11:29	0.5	55.0	1.9	3.80
14	11:30	0.5	57.8	2.8	5.60
15	11:30	0.5	61.1	3.3	6.60
16	11:31	0.5	63.5	2.4	4.80
17	11:31	0.5	66.7	3.2	6.40
18	11:32	0.5	69.5	2.8	5.60
19	11:32	0.5	71.5	2.0	4.00
20	11:33	0.5	74.0	2.5	5.00
21	11:33	0.5	76.2	2.2	4.40
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				5.27

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:39	-	5.4	-	-
2	11:39	0.5	7.5	2.1	4.20
3	11:40	0.5	10.1	2.6	5.20
4	11:40	0.5	12.3	2.2	4.40
5	11:41	0.5	14.8	2.5	5.00
6	11:41	0.5	17.2	2.4	4.80
7	11:42	0.5	19.9	2.7	5.40
8	11:42	0.5	26.0	6.1	12.20
9	11:43	0.5	30.1	4.1	8.20
10	11:43	0.5	33.5	3.4	6.80
11	11:44	0.5	36.8	3.3	6.60
12	11:45	1	43.4	6.6	6.60
13	11:45	0.5	46.8	3.4	6.80
14	11:46	1	53.4	6.6	6.60
15	11:47	1	61.2	7.8	7.80
16	11:48	1	68.9	7.7	7.70
17	11:49	1	76.7	7.8	7.80
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				7.47

Saturated Hydraulic Conductivity, K_s: 3.09E-03 cm/min or 5.15E-05 cm/sec
Matrix Flux Potential, Φ_m: 1.67E-01 cm^2/min or 2.79E-03 cm^2/sec
Alpha Parameter, α: 0.018474 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-4B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-4B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:55	-	9.5	-	-
2	12:05	10	9.5	0.0	0.00
3	12:15	10	9.5	0.0	0.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-4C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-4C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 22 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:40	-	4.9	-	-
2	12:40	0.5	6.0	1.1	2.20
3	12:41	0.5	6.9	0.9	1.80
4	12:41	0.5	7.6	0.7	1.40
5	12:42	0.5	8.5	0.9	1.80
6	12:42	0.5	9.1	0.6	1.20
7	12:43	0.5	9.8	0.7	1.40
8	12:43	0.5	10.4	0.6	1.20
9	12:44	0.5	11.1	0.7	1.40
10	12:44	0.5	11.5	0.4	0.80
11	12:45	0.5	12.0	0.5	1.00
12	12:45	0.5	12.5	0.5	1.00
13	12:46	0.5	13.0	0.5	1.00
14	12:46	0.5	13.5	0.5	1.00
15	12:47	0.5	13.9	0.4	0.80
16	12:47	0.5	14.4	0.5	1.00
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.93

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:52	-	4.5	-	-
2	12:52	0.5	4.9	0.4	0.80
3	12:53	0.5	5.2	0.3	0.60
4	12:53	0.5	5.5	0.3	0.60
5	12:54	0.5	6.0	0.5	1.00
6	12:54	0.5	6.5	0.5	1.00
7	12:55	0.5	7.1	0.6	1.20
8	12:55	0.5	7.9	0.8	1.60
9	12:56	0.5	8.7	0.8	1.60
10	12:56	0.5	9.6	0.9	1.80
11	12:57	0.5	10.4	0.8	1.60
12	12:57	0.5	11.3	0.9	1.80
13	12:58	0.5	12.1	0.8	1.60
14	12:58	0.5	13.0	0.9	1.80
15	12:59	0.5	14.0	1.0	2.00
16	12:59	0.5	14.9	0.9	1.80
17	13:00	0.5	15.8	0.9	1.80
18	13:00	0.5	16.7	0.9	1.80
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.80

Saturated Hydraulic Conductivity, K_s: 4.40E-03 cm/min or 7.34E-05 cm/sec
Matrix Flux Potential, Φ_m: -6.19E-04 cm^2/min or -1.03E-05 cm^2/sec
Alpha Parameter, α: -7.11539 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-5A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 22 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:50	-	23.6	-	-
2	12:51	1	25.3	1.7	1.70
3	12:52	1	26.7	1.4	1.40
4	12:53	1	28.0	1.3	1.30
5	12:54	1	29.3	1.3	1.30
6	12:55	1	30.2	0.9	0.90
7	12:56	1	31.4	1.2	1.20
8	12:57	1	32.6	1.2	1.20
9	12:58	1	33.8	1.2	1.20
10	12:59	1	35.1	1.3	1.30
11	13:00	1	36.4	1.3	1.30
12	13:01	1	37.6	1.2	1.20
13	13:02	1	38.8	1.2	1.20
14	13:03	1	40.0	1.2	1.20
15	13:04	1	41.2	1.2	1.20
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:07	-	28.4	-	-
2	13:12	5	28.4	0.0	0.00
3	13:17	5	28.4	0.0	0.00
4	13:22	5	33.0	4.6	0.92
5	13:23	1	34.7	1.7	1.70
6	13:24	1	36.5	1.8	1.80
7	13:25	1	38.2	1.7	1.70
8	13:26	1	39.0	0.8	0.80
9	13:27	1	40.8	1.8	1.80
10	13:28	1	42.8	2.0	2.00
11	13:29	1	44.8	2.0	2.00
12	13:30	1	46.8	2.0	2.00
13	13:31	1	48.8	2.0	2.00
14	13:32	1	50.8	2.0	2.00
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.00

Saturated Hydraulic Conductivity, K_s: 3.12E-03 cm/min or 5.20E-05 cm/sec
Matrix Flux Potential, Φ_m: 1.92E-02 cm^2/min or 3.19E-04 cm^2/sec
Alpha Parameter, α: 0.162845 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-5B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-5B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 16 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:35	-	3.4	-	-
2	13:40	5	8.0	4.6	0.92
3	13:41	1	8.8	0.8	0.80
4	13:42	1	10.2	1.4	1.40
5	13:43	1	11.8	1.6	1.60
6	13:44	1	13.1	1.3	1.30
7	13:45	1	14.2	1.1	1.10
8	13:46	1	15.3	1.1	1.10
9	13:47	1	16.4	1.1	1.10
10	13:48	1	17.5	1.1	1.10
11	13:49	1	18.6	1.1	1.10
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.10

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:51	-	9.5	-	-
2	13:52	1	15.7	6.2	6.20
3	13:53	1	22.0	6.3	6.30
4	13:53	0.5	25.1	3.1	6.20
5	13:54	0.5	28.4	3.3	6.60
6	13:54	0.5	31.6	3.2	6.40
7	13:55	0.5	34.4	2.8	5.60
8	13:55	0.5	37.0	2.6	5.20
9	13:56	0.5	39.6	2.6	5.20
10	13:56	0.5	42.0	2.4	4.80
11	13:57	0.5	44.2	2.2	4.40
12	13:57	0.5	46.4	2.2	4.40
13	13:58	0.5	48.6	2.2	4.40
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.40

Saturated Hydraulic Conductivity, K_s: 2.46E-02 cm/min or 4.10E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.68E-01 cm^2/min or -2.81E-03 cm^2/sec
Alpha Parameter, α: -0.14621 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-5C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-5C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 19 cm

H1: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:04	-	11.4	-	-
2	14:06	2	12.0	0.6	0.30
3	14:08	2	12.5	0.5	0.25
4	14:10	2	13.0	0.5	0.25
5	14:12	2	14.0	1.0	0.50
6	14:14	2	14.5	0.5	0.25
7	14:16	2	15.0	0.5	0.25
8	14:18	2	15.5	0.5	0.25
9	14:20	2	16.0	0.5	0.25
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.25

H2: 15 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:21	-	17.0	-	-
2	14:22	1	21.7	4.7	4.70
3	14:22	0.5	23.9	2.2	4.40
4	14:23	0.5	25.7	1.8	3.60
5	14:23	0.5	27.6	1.9	3.80
6	14:24	0.5	29.2	1.6	3.20
7	14:24	0.5	30.4	1.2	2.40
8	14:25	0.5	31.6	1.2	2.40
9	14:25	0.5	32.8	1.2	2.40
10	14:26	0.5	34.0	1.2	2.40
11	14:26	0.5	35.2	1.2	2.40
12	14:27	0.5	36.4	1.2	2.40
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.40

Saturated Hydraulic Conductivity, K_s: 1.51E-02 cm/min or 2.51E-04 cm/sec
Matrix Flux Potential, Φ_m: -3.73E-01 cm^2/min or -6.22E-03 cm^2/sec
Alpha Parameter, α: -0.04036 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-6A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-6A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:30	-	2.3	-	-
2	14:40	10	2.3	0.0	0.00
3	14:45	5	3.2	0.9	0.18
4	14:50	5	4.2	1.0	0.20
5	14:52	2	4.6	0.4	0.20
6	14:54	2	5.0	0.4	0.20
7	14:56	2	5.4	0.4	0.20
8	14:58	2	5.8	0.4	0.20
9	15:00	2	6.2	0.4	0.20
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:03	-	6.4	-	-
2	15:05	2	7.4	1.0	0.50
3	15:07	2	9.4	2.0	1.00
4	15:09	2	11.6	2.2	1.10
5	15:10	1	13.3	1.7	1.70
6	15:11	1	15.0	1.7	1.70
7	15:12	1	16.8	1.8	1.80
8	15:13	1	18.6	1.8	1.80
9	15:14	1	20.4	1.8	1.80
10	15:15	1	22.2	1.8	1.80
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.80

Saturated Hydraulic Conductivity, K_s: 1.31E-02 cm/min or 2.18E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.02E-01 cm^2/min or -1.71E-03 cm^2/sec
Alpha Parameter, α: -0.12802 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-6B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 19 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:18	-	11.4	-	-
2	15:28	10	11.4	0.0	0.00
3	15:38	10	11.4	0.0	0.00
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#2B-6C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#2B-6C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3 cm
Depth of Well Hole: 21 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:40	-	14.8	-	-
2	15:50	10	14.8	0.0	0.00
3	16:00	10	14.8	0.0	0.00
4	16:10	10	14.8	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-1A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-1A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:28	-	9.3	-	-
2	09:29	1	11.3	2.0	2.00
3	09:30	1	13.4	2.1	2.10
4	09:31	1	15.1	1.7	1.70
5	09:32	1	17.1	2.0	2.00
6	09:33	1	19.0	1.9	1.90
7	09:34	1	21.0	2.0	2.00
8	09:35	1	22.9	1.9	1.90
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.93

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:36	-	32.2	-	-
2	09:37	1	36.2	4.0	4.00
3	09:38	1	39.9	3.7	3.70
4	09:39	1	43.6	3.7	3.70
5	09:40	1	46.6	3.0	3.00
6	09:41	1	50.4	3.8	3.80
7	09:42	1	54.0	3.6	3.60
8	09:43	1	57.4	3.4	3.40
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.60

Saturated Hydraulic Conductivity, K_s: 1.20E-01 cm/min or 2.00E-03 cm/sec
Matrix Flux Potential, Φ_m: 1.74E-01 cm^2/min or 2.90E-03 cm^2/sec
Alpha Parameter, α: 0.690201 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-1B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-1B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:48	-	6.1	-	-
2	09:49	1	8.7	2.6	2.60
3	09:50	1	10.9	2.2	2.20
4	09:51	1	13.2	2.3	2.30
5	09:52	1	15.2	2.0	2.00
6	09:53	1	17.3	2.1	2.10
7	09:54	1	19.3	2.0	2.00
8	09:55	1	21.3	2.0	2.00
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.03

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:56	-	29.2	-	-
2	09:57	1	32.8	3.6	3.60
3	09:58	1	36.3	3.5	3.50
4	09:59	1	39.6	3.3	3.30
5	10:00	1	42.9	3.3	3.30
6	10:01	1	46.2	3.3	3.30
7	10:02	1	49.4	3.2	3.20
8	10:03	1	52.7	3.3	3.30
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.27

Saturated Hydraulic Conductivity, K_s: 6.29E-02 cm/min or 1.05E-03 cm/sec
Matrix Flux Potential, Φ_m: 6.79E-01 cm^2/min or 1.13E-02 cm^2/sec
Alpha Parameter, α: 0.092588 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-1C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:57	-	12.3	-	-
2	08:58	1	17.0	4.7	4.70
3	08:59	1	20.7	3.7	3.70
4	09:00	1	23.9	3.2	3.20
5	09:01	1	26.9	3.0	3.00
6	09:02	1	29.6	2.7	2.70
7	09:03	1	32.3	2.7	2.70
8	09:04	1	34.8	2.5	2.50
9	09:05	1	36.9	2.1	2.10
10	09:06	1	39.7	2.8	2.80
11	09:07	1	42.2	2.5	2.50
12	09:08	1	44.5	2.3	2.30
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.48

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:11	-	10.4	-	-
2	09:12	1	14.6	4.2	4.20
3	09:13	1	18.6	4.0	4.00
4	09:14	1	22.2	3.6	3.60
5	09:15	1	25.3	3.1	3.10
6	09:16	1	28.3	3.0	3.00
7	09:17	1	31.8	3.5	3.50
8	09:18	1	35.3	3.5	3.50
9	09:19	1	38.3	3.0	3.00
10	09:20	1	41.6	3.3	3.30
11	09:21	1	44.8	3.2	3.20
12	09:22	1	48.0	3.2	3.20
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.18

Saturated Hydraulic Conductivity, K_s: -2.25E-02 cm/min or -3.76E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.61E+00 cm^2/min or 2.68E-02 cm^2/sec
Alpha Parameter, α: -0.01402 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-2A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-2A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:10	-	9.4	-	-
2	10:11	1	11.0	1.6	1.60
3	10:12	1	12.2	1.2	1.20
4	10:13	1	13.4	1.2	1.20
5	10:14	1	14.3	0.9	0.90
6	10:15	1	14.9	0.6	0.60
7	10:16	1	15.9	1.0	1.00
8	10:17	1	16.6	0.7	0.70
9	10:18	1	17.3	0.7	0.70
10	10:19	1	18.2	0.9	0.90
11	10:20	1	19.0	0.8	0.80
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.80

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:21	-	28.3	-	-
2	10:22	1	30.2	1.9	1.90
3	10:23	1	32.1	1.9	1.90
4	10:24	1	34.0	1.9	1.90
5	10:25	1	35.9	1.9	1.90
6	10:26	1	37.4	1.5	1.50
7	10:27	1	38.7	1.3	1.30
8	10:28	1	40.4	1.7	1.70
9	10:29	1	41.8	1.4	1.40
10	10:30	1	43.2	1.4	1.40
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.45

Saturated Hydraulic Conductivity, K_s: 4.48E-02 cm/min or 7.47E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.10E-01 cm^2/min or 1.83E-03 cm^2/sec
Alpha Parameter, α: 0.408153 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-2B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:10	-	5.1	-	-
2	10:11	1	7.1	2.0	2.00
3	10:12	1	8.6	1.5	1.50
4	10:13	1	10.0	1.4	1.40
5	10:14	1	11.4	1.4	1.40
6	10:15	1	12.6	1.2	1.20
7	10:16	1	14.0	1.4	1.40
8	10:17	1	15.3	1.3	1.30
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.30

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:43	-	35.5	-	-
2	10:44	1	40.8	5.3	5.30
3	10:45	1	47.0	6.2	6.20
4	10:46	1	52.9	5.9	5.90
5	10:47	1	58.5	5.6	5.60
6	10:48	1	63.8	5.3	5.30
7	10:49	1	69.2	5.4	5.40
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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22					
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24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				5.43

Saturated Hydraulic Conductivity, K_s: 4.11E-01 cm/min or 6.85E-03 cm/sec
Matrix Flux Potential, Φ_m: -2.3E+00 cm^2/min or -3.80E-02 cm^2/sec
Alpha Parameter, α: -0.18012 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-3A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-3A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:05	-	14.3	-	-
2	17:06	1	18.1	3.8	3.80
3	17:07	1	22.0	3.9	3.90
4	17:08	1	25.3	3.3	3.30
5	17:09	1	28.7	3.4	3.40
6	17:10	1	32.1	3.4	3.40
7	17:11	1	35.5	3.4	3.40
8	17:12	1	38.3	2.8	2.80
9					
10					
11					
12					
13					
14					
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16					
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18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				3.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:15	-	8.7	-	-
2	17:16	1	12.1	3.4	3.40
3	17:17	1	15.3	3.2	3.20
4	17:18	1	18.3	3.0	3.00
5	17:19	1	21.3	3.0	3.00
6	17:20	1	24.3	3.0	3.00
7	17:21	1	27.3	3.0	3.00
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
19					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.00

Saturated Hydraulic Conductivity, K_s: -1.62E-01 cm/min or -2.70E-03 cm/sec
Matrix Flux Potential, Φ_m: 3.11E+00 cm^2/min or 5.19E-02 cm^2/sec
Alpha Parameter, α: -0.05206 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-2C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-2C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:54	-	14.6	-	-
2	10:55	1	19.9	5.3	5.30
3	10:56	1	24.6	4.7	4.70
4	10:57	1	29.0	4.4	4.40
5	10:58	1	33.0	4.0	4.00
6	10:59	1	36.7	3.7	3.70
7	11:00	1	40.5	3.8	3.80
8	11:01	1	44.3	3.8	3.80
9	11:03	2	49.5	5.2	2.60
10	11:04	1	52.0	2.5	2.50
11	11:05	1	55.0	3.0	3.00
12	11:06	1	58.0	3.0	3.00
13	11:07	1	60.8	2.8	2.80
14					
15					
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26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 2.93

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:10	-	10.7	-	-
2	11:11	1	16.7	6.0	6.00
3	11:12	1	21.1	4.4	4.40
4	11:13	1	25.0	3.9	3.90
5	11:14	1	29.3	4.3	4.30
6	11:15	1	33.3	4.0	4.00
7	11:16	1	37.4	4.1	4.10
8	11:17	1	41.3	3.9	3.90
9	11:18	1	44.9	3.6	3.60
10	11:19	1	48.3	3.4	3.40
11	11:20	1	51.3	3.0	3.00
12	11:21	1	55.0	3.7	3.70
13	11:22	1	58.4	3.4	3.40
14	11:23	1	61.8	3.4	3.40
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28					
29					
30					

Steady rate for 3 consecutive readings (R2): 3.50

Saturated Hydraulic Conductivity, K_s: -5.71E-02 cm/min or -9.52E-04 cm/sec
Matrix Flux Potential, Φ_m: 2.14E+00 cm^2/min or 3.56E-02 cm^2/sec
Alpha Parameter, α: -0.02673 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-3B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-3B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	01:27	-	7.5	-	-
2	01:28	1	10.4	2.9	2.90
3	01:29	1	13.3	2.9	2.90
4	01:30	1	16.0	2.7	2.70
5	01:31	1	18.6	2.6	2.60
6	01:32	1	21.2	2.6	2.60
7	01:33	1	23.8	2.6	2.60
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28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.60

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:34	-	33.1	-	-
2	17:35	1	38.1	5.0	5.00
3	17:36	1	43.0	4.9	4.90
4	17:37	1	47.0	4.0	4.00
5	17:38	1	51.2	4.2	4.20
6	17:39	1	55.8	4.6	4.60
7	17:40	1	60.4	4.6	4.60
8					
9					
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28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.47

Saturated Hydraulic Conductivity, K_s: 1.16E-01 cm/min or 1.93E-03 cm/sec
Matrix Flux Potential, Φ_m: 5.92E-01 cm^2/min or 9.86E-03 cm^2/sec
Alpha Parameter, α: 0.195546 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-3C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:45	-	11.5	-	-
2	16:46	1	14.5	3.0	3.00
3	16:47	1	16.2	1.7	1.70
4	16:48	1	18.5	2.3	2.30
5	16:49	1	21.0	2.5	2.50
6	16:50	1	23.3	2.3	2.30
7	16:51	1	25.2	1.9	1.90
8	16:52	1	27.5	2.3	2.30
9	16:53	1	29.5	2.0	2.00
10					
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12					
13					
14					
15					
16					
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18					
19					
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25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.07

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	16:54	-	38.0	-	-
2	16:55	1	40.8	2.8	2.80
3	16:56	1	43.5	2.7	2.70
4	16:57	1	46.0	2.5	2.50
5	16:58	1	48.7	2.7	2.70
6	16:59	1	51.5	2.8	2.80
7	17:00	1	54.2	2.7	2.70
8					
9					
10					
11					
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14					
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27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.73

Saturated Hydraulic Conductivity, K_s: -7.65E-03 cm/min or -1.28E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.25E+00 cm^2/min or 2.08E-02 cm^2/sec
Alpha Parameter, α: -0.00612 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-4A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:11	-	4.4	-	-
2	15:15	4	9.9	5.5	1.38
3	15:19	4	15.8	5.9	1.48
4	15:23	4	22.5	6.7	1.68
5	15:27	4	29.5	7.0	1.75
6	15:31	4	34.9	5.4	1.35
7	15:35	4	39.8	4.9	1.23
8	15:39	4	45.8	6.0	1.50
9					
10					
11					
12					
13					
14					
15					
16					
17					
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19					
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22					
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24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.36

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:40	-	3.7	-	-
2	15:40	0.25	10.5	6.8	27.20
3	15:40	0.25	17.5	7.0	28.00
4	15:40	0.25	27.0	9.5	38.00
5	15:41	0.25	35.0	8.0	32.00
6	15:41	0.25	44.0	9.0	36.00
7	15:41	0.25	55.0	11.0	44.00
8	15:41	0.25	64.0	9.0	36.00
9					
10					
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12					
13					
14					
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16					
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18					
19					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				37.00

Saturated Hydraulic Conductivity, K_s: 2.35E-01 cm/min or 3.92E-03 cm/sec
Matrix Flux Potential, Φ_m: -1.7E+00 cm^2/min or -2.85E-02 cm^2/sec
Alpha Parameter, α: -0.13761 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-4B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-4B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:27	-	10.3	-	-
2	16:28	1	12.6	2.3	2.30
3	16:29	1	14.8	2.2	2.20
4	16:30	1	16.6	1.8	1.80
5	16:31	1	18.5	1.9	1.90
6	16:32	1	20.2	1.7	1.70
7	16:33	1	21.7	1.5	1.50
8	16:34	1	23.2	1.5	1.50
9	16:35	1	24.7	1.5	1.50
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.50

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	16:35	-	35.1	-	-
2	16:35	0.5	39.0	3.9	7.80
3	16:36	0.5	42.0	3.0	6.00
4	16:36	0.5	45.0	3.0	6.00
5	16:37	0.5	48.0	3.0	6.00
6	16:37	0.5	51.0	3.0	6.00
7	16:38	0.5	54.0	3.0	6.00
8	16:38	0.5	57.0	3.0	6.00
9					
10					
11					
12					
13					
14					
15					
16					
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18					
19					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				6.00

Saturated Hydraulic Conductivity, K_s: 4.45E-01 cm/min or 7.41E-03 cm/sec
Matrix Flux Potential, Φ_m: -2.4E+00 cm^2/min or -4.02E-02 cm^2/sec
Alpha Parameter, α: -0.18441 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-4C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-4C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:51	-	8.9	-	-
2	15:52	1	12.7	3.8	3.80
3	15:53	1	15.6	2.9	2.90
4	15:54	1	17.7	2.1	2.10
5	15:55	1	19.7	2.0	2.00
6	15:56	1	21.4	1.7	1.70
7	15:57	1	23.0	1.6	1.60
8	15:58	1	24.5	1.5	1.50
9	15:59	1	26.0	1.5	1.50
10	16:00	1	27.6	1.6	1.60
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.53

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	16:02	-	4.9	-	-
2	16:03	1	7.5	2.6	2.60
3	16:04	1	10.1	2.6	2.60
4	16:05	1	12.5	2.4	2.40
5	16:06	1	15.1	2.6	2.60
6	16:07	1	17.5	2.4	2.40
7	16:08	1	20.0	2.5	2.50
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.50

Saturated Hydraulic Conductivity, K_s: 5.85E-02 cm/min or 9.75E-04 cm/sec
Matrix Flux Potential, Φ_m: 4.6E-01 cm^2/min or 7.72E-03 cm^2/sec
Alpha Parameter, α: 0.126297 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-5A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:08	-	1.9	-	-
2	10:10	2	4.9	3.0	1.50
3	10:12	2	7.4	2.5	1.25
4	10:14	2	9.8	2.4	1.20
5	10:16	2	12.5	2.7	1.35
6	10:18	2	15.1	2.6	1.30
7	10:20	2	17.9	2.8	1.40
8	10:22	2	20.7	2.8	1.40
9	10:24	2	23.6	2.9	1.45
10					
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14					
15					
16					
17					
18					
19					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.42

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:25	-	33.4	-	-
2	10:26	1	36.4	3.0	3.00
3	10:27	1	40.4	4.0	4.00
4	10:28	1	44.4	4.0	4.00
5	10:29	1	48.4	4.0	4.00
6	10:30	1	52.4	4.0	4.00
7	10:31	1	56.4	4.0	4.00
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.00

Saturated Hydraulic Conductivity, K_s: 2.80E-01 cm/min or 4.67E-03 cm/sec
Matrix Flux Potential, Φ_m: -1.3E+00 cm^2/min or -2.24E-02 cm^2/sec
Alpha Parameter, α: -0.20796 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-5B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-5B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:45	-	1.9	-	-
2	10:47	2	3.5	1.6	0.80
3	10:49	2	5.1	1.6	0.80
4	10:51	2	6.6	1.5	0.75
5	10:53	2	8.2	1.6	0.80
6	10:55	2	9.7	1.5	0.75
7	10:57	2	11.2	1.5	0.75
8					
9					
10					
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12					
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19					
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24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.77

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:58	-	20.8	-	-
2	10:59	1	22.8	2.0	2.00
3	11:00	1	24.6	1.8	1.80
4	11:01	1	26.3	1.7	1.70
5	11:02	1	28.1	1.8	1.80
6	11:03	1	29.9	1.8	1.80
7	11:04	1	31.9	2.0	2.00
8	11:05	1	34.0	2.1	2.10
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27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.97

Saturated Hydraulic Conductivity, K_s: 1.25E-01 cm/min or 2.08E-03 cm/sec
Matrix Flux Potential, Φ_m: -5.2E-01 cm^2/min or -8.68E-03 cm^2/sec
Alpha Parameter, α: -0.24013 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-5C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-5C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:10	-	3.0	-	-
2	11:12	2	4.1	1.1	0.55
3	11:14	2	5.9	1.8	0.90
4	11:18	4	9.2	3.3	0.83
5	11:20	2	11.8	2.6	1.30
6	11:22	2	12.2	0.4	0.20
7	11:24	2	13.7	1.5	0.75
8	11:26	2	15.2	1.5	0.75
9	11:28	2	16.6	1.4	0.70
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.73

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	10:27	-	24.9	-	-
2	10:28	1	27.7	2.8	2.80
3	10:29	1	30.1	2.4	2.40
4	10:30	1	32.8	2.7	2.70
5	10:31	1	35.3	2.5	2.50
6	10:32	1	38.0	2.7	2.70
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.63

Saturated Hydraulic Conductivity, K_s: 2.00E-01 cm/min or 3.34E-03 cm/sec
Matrix Flux Potential, Φ_m: -1.1E+00 cm^2/min or -1.91E-02 cm^2/sec
Alpha Parameter, α: -0.17477 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-6A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-6A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:47	-	37.2	-	-
2	14:48	1	38.4	1.2	1.20
3	14:49	1	39.8	1.4	1.40
4	14:50	1	41.4	1.6	1.60
5	14:51	1	43.5	2.1	2.10
6	14:52	1	45.3	1.8	1.80
7	14:53	1	47.0	1.7	1.70
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.87

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:39	-	15.2	-	-
2	14:39	0.5	19.2	4.0	8.00
3	14:40	0.5	22.3	3.1	6.20
4	14:40	0.5	24.1	1.8	3.60
5	14:41	0.5	25.7	1.6	3.20
6	14:41	0.5	27.2	1.5	3.00
7	14:42	0.5	28.6	1.4	2.80
8	14:42	0.5	30.1	1.5	3.00
9	14:43	0.5	31.5	1.4	2.80
10	14:43	0.5	33.1	1.6	3.20
11	14:44	0.5	34.5	1.4	2.80
12	14:44	0.5	36.0	1.5	3.00
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.00

Saturated Hydraulic Conductivity, K_s: 5.99E-02 cm/min or 9.98E-04 cm/sec
Matrix Flux Potential, Φ_m: 6.1E-01 cm^2/min or 1.02E-02 cm^2/sec
Alpha Parameter, α: 0.097787 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-6B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:30	-	8.0	-	-
2	12:32	2	11.2	3.2	1.60
3	12:34	2	13.7	2.5	1.25
4	12:36	2	15.9	2.2	1.10
5	12:38	2	18.8	2.9	1.45
6	12:40	2	21.1	2.3	1.15
7	12:42	2	23.6	2.5	1.25
8	12:44	2	26.0	2.4	1.20
9	12:46	2	28.6	2.6	1.30
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.25

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:49	-	7.0	-	-
2	12:50	1	9.6	2.6	2.60
3	12:51	1	12.2	2.6	2.60
4	12:52	1	14.5	2.3	2.30
5	12:53	1	17.0	2.5	2.50
6	12:54	1	19.5	2.5	2.50
7	12:55	1	21.8	2.3	2.30
8	12:56	1	24.3	2.5	2.50
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.43

Saturated Hydraulic Conductivity, K_s: 9.66E-02 cm/min or 1.61E-03 cm/sec
Matrix Flux Potential, Φ_m: -1.2E-01 cm^2/min or -2.00E-03 cm^2/sec
Alpha Parameter, α: -0.80394 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3A-6C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3A-6C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:00	-	3.9	-	-
2	13:04	4	7.2	3.3	0.83
3	13:08	4	9.7	2.5	0.63
4	13:12	4	11.2	1.5	0.38
5	13:16	4	13.4	2.2	0.55
6	13:20	4	15.1	1.7	0.43
7	13:24	4	16.9	1.8	0.45
8	13:28	4	18.9	2.0	0.50
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.46

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:29	-	26.4	-	-
2	13:31	2	29.1	2.7	1.35
3	13:33	2	31.8	2.7	1.35
4	13:35	2	34.4	2.6	1.30
5	13:37	2	36.7	2.3	1.15
6	13:39	2	39.2	2.5	1.25
7	13:41	2	41.4	2.2	1.10
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.17

Saturated Hydraulic Conductivity, K_s: 7.35E-02 cm/min or 1.23E-03 cm/sec
Matrix Flux Potential, Φ_m: -3.0E-01 cm^2/min or -5.03E-03 cm^2/sec
Alpha Parameter, α: -0.24368 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-1A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-1A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:10	-	6.0	-	-
2	12:10	0.5	6.5	0.5	1.00
3	12:11	0.5	7.8	1.3	2.60
4	12:11	0.5	9.0	1.2	2.40
5	12:12	0.5	10.1	1.1	2.20
6	12:12	0.5	11.2	1.1	2.20
7	12:13	0.5	12.3	1.1	2.20
8	12:13	0.5	13.4	1.1	2.20
9	12:14	0.5	14.5	1.1	2.20
10	12:14	0.5	15.6	1.1	2.20
11	12:15	0.5	16.7	1.1	2.20
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:16	-	26.2	-	-
2	12:16	0.5	28.4	2.2	4.40
3	12:17	0.5	30.4	2.0	4.00
4	12:17	0.5	32.2	1.8	3.60
5	12:18	0.5	33.7	1.5	3.00
6	12:18	0.5	35.6	1.9	3.80
7	12:19	0.5	37.7	2.1	4.20
8	12:19	0.5	40.4	2.7	5.40
9	12:20	0.5	42.2	1.8	3.60
10	12:20	0.5	44.0	1.8	3.60
11	12:21	0.5	45.8	1.8	3.60
12	12:21	0.5	47.6	1.8	3.60
13	12:22	0.5	49.3	1.7	3.40
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.53

Saturated Hydraulic Conductivity, K_s: 7.67E-02 cm/min or 1.28E-03 cm/sec
Matrix Flux Potential, Φ_m: 7.2E-01 cm^2/min or 1.20E-02 cm^2/sec
Alpha Parameter, α: 0.106486 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-1B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-1B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 19 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:52	-	7.1	-	-
2	12:52	0.5	8.1	1.0	2.00
3	12:53	0.5	9.1	1.0	2.00
4	12:53	0.5	10.1	1.0	2.00
5	12:54	0.5	11.2	1.1	2.20
6	12:54	0.5	12.3	1.1	2.20
7	12:55	0.5	13.3	1.0	2.00
8	12:55	0.5	14.4	1.1	2.20
9	12:56	0.5	15.5	1.1	2.20
10	12:56	0.5	16.6	1.1	2.20
11	12:57	0.5	17.7	1.1	2.20
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:58	-	27.7	-	-
2	12:58	0.5	29.0	1.3	2.60
3	12:59	0.5	30.3	1.3	2.60
4	12:59	0.5	32.1	1.8	3.60
5	13:00	0.5	34.2	2.1	4.20
6	13:00	0.5	36.3	2.1	4.20
7	13:01	0.5	38.4	2.1	4.20
8	13:01	0.5	40.5	2.1	4.20
9	13:02	0.5	42.6	2.1	4.20
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.20

Saturated Hydraulic Conductivity, K_s: 1.66E-01 cm/min or 2.76E-03 cm/sec
Matrix Flux Potential, Φ_m: 2.1E-02 cm^2/min or 3.48E-04 cm^2/sec
Alpha Parameter, α: 7.947072 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-1C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:20	-	19.4	-	-
2	13:20	0.5	20.3	0.9	1.80
3	13:21	0.5	21.5	1.2	2.40
4	13:21	0.5	22.4	0.9	1.80
5	13:22	0.5	23.3	0.9	1.80
6	13:22	0.5	24.2	0.9	1.80
7	13:23	0.5	25.1	0.9	1.80
8	13:23	0.5	26.0	0.9	1.80
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.80

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:25	-	33.2	-	-
2	12:25	0.5	34.9	1.7	3.40
3	12:26	0.5	36.3	1.4	2.80
4	12:26	0.5	37.8	1.5	3.00
5	12:27	0.5	39.2	1.4	2.80
6	12:27	0.5	40.8	1.6	3.20
7	12:28	0.5	42.4	1.6	3.20
8	12:28	0.5	44.0	1.6	3.20
9	12:29	0.5	45.6	1.6	3.20
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.20

Saturated Hydraulic Conductivity, K_s: 1.04E-01 cm/min or 1.74E-03 cm/sec
Matrix Flux Potential, Φ_m: 2.7E-01 cm^2/min or 4.42E-03 cm^2/sec
Alpha Parameter, α: 0.392588 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-2A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-2A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:41	-	8.0	-	-
2	13:41	0.5	9.6	1.6	3.20
3	13:42	0.5	10.9	1.3	2.60
4	13:42	0.5	11.9	1.0	2.00
5	13:43	0.5	13.0	1.1	2.20
6	13:43	0.5	14.0	1.0	2.00
7	13:44	0.5	14.5	0.5	1.00
8	13:44	0.5	15.0	0.5	1.00
9	13:45	0.5	15.8	0.8	1.60
10	13:45	0.5	16.5	0.7	1.40
11	13:46	0.5	17.3	0.8	1.60
12	13:46	0.5	18.1	0.8	1.60
13	13:47	0.5	18.9	0.8	1.60
14	13:47	0.5	19.7	0.8	1.60
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.60

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:49	-	24.9	-	-
2	13:49	0.5	25.9	1.0	2.00
3	13:50	0.5	26.9	1.0	2.00
4	13:50	0.5	28.0	1.1	2.20
5	13:51	0.5	29.1	1.1	2.20
6	13:51	0.5	30.2	1.1	2.20
7	13:52	0.5	31.3	1.1	2.20
8	13:52	0.5	32.5	1.2	2.40
9	13:53	0.5	33.7	1.2	2.40
10	13:53	0.5	34.9	1.2	2.40
11	13:54	0.5	36.1	1.2	2.40
12	13:54	0.5	37.3	1.2	2.40
13	13:55	0.5	38.5	1.2	2.40
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.40

Saturated Hydraulic Conductivity, K_s: 3.31E-02 cm/min or 5.52E-04 cm/sec
Matrix Flux Potential, Φ_m: 7.0E-01 cm^2/min or 1.17E-02 cm^2/sec
Alpha Parameter, α: 0.04717 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-2B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 21 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:40	-	3.4	-	-
2	15:41	1	3.9	0.5	0.50
3	15:42	1	4.4	0.5	0.50
4	15:43	1	4.9	0.5	0.50
5	15:44	1	5.4	0.5	0.50
6	15:45	1	5.9	0.5	0.50
7	15:46	1	6.4	0.5	0.50
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.50

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:47	-	13.3	-	-
2	15:48	1	15.9	2.6	2.60
3	15:49	1	17.7	1.8	1.80
4	15:50	1	19.7	2.0	2.00
5	15:51	1	21.5	1.8	1.80
6	15:52	1	23.4	1.9	1.90
7	15:53	1	25.4	2.0	2.00
8	15:54	1	27.3	1.9	1.90
9	15:55	1	29.2	1.9	1.90
10	15:56	1	31.1	1.9	1.90
11	15:57	1	33.0	1.9	1.90
12	15:58	1	34.9	1.9	1.90
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.90

Saturated Hydraulic Conductivity, K_s: 1.71E-01 cm/min or 2.85E-03 cm/sec
Matrix Flux Potential, Φ_m: -1.1E+00 cm^2/min or -1.91E-02 cm^2/sec
Alpha Parameter, α: -0.1489 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-2C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-2C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:08	-	4.4	-	-
2	16:08	0.5	5.0	0.6	1.20
3	16:09	0.5	5.6	0.6	1.20
4	16:09	0.5	6.4	0.8	1.60
5	16:10	0.5	7.3	0.9	1.80
6	16:10	0.5	8.0	0.7	1.40
7	16:11	0.5	8.7	0.7	1.40
8	16:11	0.5	9.4	0.7	1.40
9	16:12	0.5	10.1	0.7	1.40
10	16:12	0.5	10.8	0.7	1.40
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	16:14	-	18.7	-	-
2	16:14	0.5	20.2	1.5	3.00
3	16:15	0.5	21.4	1.2	2.40
4	16:15	0.5	22.7	1.3	2.60
5	16:16	0.5	23.8	1.1	2.20
6	16:16	0.5	24.9	1.1	2.20
7	16:17	0.5	26.0	1.1	2.20
8	16:17	0.5	27.1	1.1	2.20
9	16:18	0.5	28.2	1.1	2.20
10	16:18	0.5	29.3	1.1	2.20
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.20

Saturated Hydraulic Conductivity, K_s: 3.32E-02 cm/min or 5.54E-04 cm/sec
Matrix Flux Potential, Φ_m: 4.9E-01 cm^2/min or 8.14E-03 cm^2/sec
Alpha Parameter, α: 0.068044 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-3A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-3A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 22 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:23	-	8.6	-	-
2	13:23	0.5	9.6	1.0	2.00
3	13:24	0.5	10.5	0.9	1.80
4	13:24	0.5	11.4	0.9	1.80
5	13:25	0.5	12.2	0.8	1.60
6	13:25	0.5	12.9	0.7	1.40
7	13:26	0.5	13.6	0.7	1.40
8	13:26	0.5	14.3	0.7	1.40
9	13:27	0.5	15.0	0.7	1.40
10	13:27	0.5	15.7	0.7	1.40
11	13:28	0.5	16.4	0.7	1.40
12	13:28	0.5	17.1	0.7	1.40
13	13:29	0.5	17.8	0.7	1.40
14	13:29	0.5	18.5	0.7	1.40
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 1.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	23:31	-	26.3	-	-
2	23:31	0.5	27.4	1.1	2.20
3	23:32	0.5	28.7	1.3	2.60
4	23:32	0.5	30.1	1.4	2.80
5	23:33	0.5	31.4	1.3	2.60
6	23:33	0.5	32.7	1.3	2.60
7	23:34	0.5	34.1	1.4	2.80
8	23:34	0.5	35.4	1.3	2.60
9	23:35	0.5	36.8	1.4	2.80
10	23:35	0.5	38.2	1.4	2.80
11	23:36	0.5	39.5	1.3	2.60
12	23:36	0.5	40.8	1.3	2.60
13	23:37	0.5	42.1	1.3	2.60
14	23:37	0.5	43.4	1.3	2.60
15	23:38	0.5	44.7	1.3	2.60
16	23:38	0.5	46.0	1.3	2.60
17	23:39	0.5	47.3	1.3	2.60
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 2.60

Saturated Hydraulic Conductivity, K_s: 9.03E-02 cm/min or 1.50E-03 cm/sec
Matrix Flux Potential, Φ_m: 1.4E-02 cm^2/min or 2.35E-04 cm^2/sec
Alpha Parameter, α: 6.40279 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-3B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-3B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 19 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:46	-	4.5	-	-
2	13:46	0.5	4.9	0.4	0.80
3	13:47	0.5	5.4	0.5	1.00
4	13:47	0.5	6.0	0.6	1.20
5	13:48	0.5	6.5	0.5	1.00
6	13:48	0.5	7.0	0.5	1.00
7	13:49	0.5	7.5	0.5	1.00
8	13:49	0.5	8.1	0.6	1.20
9	13:50	0.5	8.6	0.5	1.00
10	13:50	0.5	9.1	0.5	1.00
11	13:51	0.5	9.6	0.5	1.00
12	13:51	0.5	10.2	0.6	1.20
13	13:52	0.5	10.7	0.5	1.00
14	13:52	0.5	11.2	0.5	1.00
15	13:53	0.5	11.7	0.5	1.00
16	13:53	0.5	12.2	0.5	1.00
17	13:54	0.5	12.7	0.5	1.00
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:55	-	22.8	-	-
2	13:55	0.5	24.8	2.0	4.00
3	13:56	0.5	26.1	1.3	2.60
4	13:56	0.5	27.6	1.5	3.00
5	13:57	0.5	29.0	1.4	2.80
6	13:57	0.5	30.4	1.4	2.80
7	13:58	0.5	32.0	1.6	3.20
8	13:58	0.5	33.2	1.2	2.40
9	13:59	0.5	34.4	1.2	2.40
10	13:59	0.5	35.8	1.4	2.80
11	14:00	0.5	37.2	1.4	2.80
12	14:00	0.5	38.4	1.2	2.40
13	14:01	0.5	40.6	2.2	4.40
14	14:01	0.5	40.8	0.2	0.40
15	14:02	0.5	42.1	1.3	2.60
16	14:02	0.5	43.4	1.3	2.60
17	14:03	0.5	44.6	1.2	2.40
18	14:03	0.5	45.9	1.3	2.60
19	14:04	0.5	47.2	1.3	2.60
20	14:04	0.5	48.5	1.3	2.60
21	14:05	0.5	49.8	1.3	2.60
22	14:05	0.5	51.1	1.3	2.60
23	14:06	0.5	52.4	1.3	2.60
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.60

Saturated Hydraulic Conductivity, K_s: 1.68E-01 cm/min or 2.80E-03 cm/sec
Matrix Flux Potential, Φ_m: -7.2E-01 cm^2/min or -1.19E-02 cm^2/sec
Alpha Parameter, α: -0.23438 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-3C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:12	-	10.6	-	-
2	14:12	0.5	12.0	1.4	2.80
3	14:13	0.5	13.3	1.3	2.60
4	14:13	0.5	14.6	1.3	2.60
5	14:14	0.5	15.9	1.3	2.60
6	14:14	0.5	17.2	1.3	2.60
7	14:15	0.5	18.5	1.3	2.60
8	14:15	0.5	19.6	1.1	2.20
9	14:16	0.5	20.7	1.1	2.20
10	14:16	0.5	22.0	1.3	2.60
11	14:17	0.5	23.1	1.1	2.20
12	14:17	0.5	24.2	1.1	2.20
13	14:18	0.5	25.4	1.2	2.40
14	14:18	0.5	26.6	1.2	2.40
15	14:19	0.5	27.8	1.2	2.40
16	14:19	0.5	29.0	1.2	2.40
17	14:20	0.5	30.2	1.2	2.40
18	14:20	0.5	31.4	1.2	2.40
19	14:21	0.5	32.6	1.2	2.40
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:22	-	49.0	-	-
2	14:22	0.5	51.3	2.3	4.60
3	14:23	0.5	53.7	2.4	4.80
4	14:23	0.5	57.0	3.3	6.60
5	14:24	0.5	59.3	2.3	4.60
6	14:24	0.5	61.6	2.3	4.60
7	14:25	0.5	63.9	2.3	4.60
8	14:25	0.5	66.2	2.3	4.60
9	14:26	0.5	68.5	2.3	4.60
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.60

Saturated Hydraulic Conductivity, K_s: 1.83E-01 cm/min or 3.06E-03 cm/sec
Matrix Flux Potential, Φ_m: 3.7E-03 cm^2/min or 6.14E-05 cm^2/sec
Alpha Parameter, α: 49.78754 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-4A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 19 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:55	-	3.5	-	-
2	16:55	0.5	4.8	1.3	2.60
3	16:56	0.5	6.0	1.2	2.40
4	16:56	0.5	7.3	1.3	2.60
5	16:57	0.5	8.4	1.1	2.20
6	16:57	0.5	9.5	1.1	2.20
7	16:58	0.5	10.7	1.2	2.40
8	16:58	0.5	11.6	0.9	1.80
9	16:59	0.5	12.6	1.0	2.00
10	16:59	0.5	13.6	1.0	2.00
11	17:00	0.5	14.7	1.1	2.20
12	17:00	0.5	15.8	1.1	2.20
13	17:01	0.5	16.9	1.1	2.20
14	17:01	0.5	18.0	1.1	2.20
15	17:02	0.5	19.1	1.1	2.20
16	17:02	0.5	20.2	1.1	2.20
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:05	-	13.5	-	-
2	17:05	0.5	15.5	2.0	4.00
3	17:06	0.5	17.4	1.9	3.80
4	17:06	0.5	19.3	1.9	3.80
5	17:07	0.5	21.2	1.9	3.80
6	17:07	0.5	22.1	0.9	1.80
7	17:08	0.5	24.0	1.9	3.80
8	17:08	0.5	25.8	1.8	3.60
9	17:09	0.5	26.7	0.9	1.80
10	17:09	0.5	28.6	1.9	3.80
11	17:10	0.5	29.5	0.9	1.80
12	17:10	0.5	31.4	1.9	3.80
13	17:11	0.5	33.3	1.9	3.80
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.20

Saturated Hydraulic Conductivity, K_s: 3.22E-02 cm/min or 5.36E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.1E+00 cm^2/min or 1.78E-02 cm^2/sec
Alpha Parameter, α: 0.030058 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-4B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-4B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:36	-	3.4	-	-
2	17:36	0.5	4.8	1.4	2.80
3	17:37	0.5	5.8	1.0	2.00
4	17:37	0.5	6.8	1.0	2.00
5	17:38	0.5	7.8	1.0	2.00
6	17:38	0.5	8.8	1.0	2.00
7	17:39	0.5	9.8	1.0	2.00
8	17:39	0.5	10.8	1.0	2.00
9	17:40	0.5	11.8	1.0	2.00
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				2.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:41	-	17.1	-	-
2	17:41	0.5	18.9	1.8	3.60
3	17:42	0.5	20.9	2.0	4.00
4	17:42	0.5	22.5	1.6	3.20
5	17:43	0.5	24.5	2.0	4.00
6	17:43	0.5	26.3	1.8	3.60
7	17:44	0.5	28.2	1.9	3.80
8	17:44	0.5	30.2	2.0	4.00
9	17:45	0.5	32.4	2.2	4.40
10	17:45	0.5	34.5	2.1	4.20
11	17:46	0.5	36.6	2.1	4.20
12	17:46	0.5	38.8	2.2	4.40
13	17:47	0.5	40.9	2.1	4.20
14	17:47	0.5	43.0	2.1	4.20
15	17:48	0.5	45.1	2.1	4.20
16	17:48	0.5	47.2	2.1	4.20
17	17:49	0.5	49.3	2.1	4.20
18	17:49	0.5	51.4	2.1	4.20
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				4.20

Saturated Hydraulic Conductivity, K_s: 1.98E-01 cm/min or 3.30E-03 cm/sec
Matrix Flux Potential, Φ_m: -5.6E-01 cm^2/min or -9.26E-03 cm^2/sec
Alpha Parameter, α: -0.35664 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-4C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-4C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 4 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:54	-	4.4	-	-
2	17:54	0.5	5.2	0.8	1.60
3	17:55	0.5	5.9	0.7	1.40
4	17:55	0.5	6.6	0.7	1.40
5	17:56	0.5	7.3	0.7	1.40
6	17:56	0.5	7.9	0.6	1.20
7	17:57	0.5	8.4	0.5	1.00
8	17:57	0.5	8.9	0.5	1.00
9	17:58	0.5	9.4	0.5	1.00
10	17:58	0.5	10.0	0.6	1.20
11	17:59	0.5	10.6	0.6	1.20
12	17:59	0.5	11.2	0.6	1.20
13	18:00	0.5	11.8	0.6	1.20
14	18:00	0.5	12.4	0.6	1.20
15	18:01	0.5	13.0	0.6	1.20
16	18:01	0.5	13.6	0.6	1.20
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 1.20

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	18:05	-	8.8	-	-
2	18:05	0.5	9.1	0.3	0.60
3	18:06	0.5	9.5	0.4	0.80
4	18:06	0.5	9.9	0.4	0.80
5	18:07	0.5	10.3	0.4	0.80
6	18:07	0.5	10.8	0.5	1.00
7	18:08	0.5	11.6	0.8	1.60
8	18:08	0.5	12.2	0.6	1.20
9	18:09	0.5	12.8	0.6	1.20
10	18:09	0.5	13.4	0.6	1.20
11	18:10	0.5	14.1	0.7	1.40
12	18:10	0.5	14.9	0.8	1.60
13	18:11	0.5	15.7	0.8	1.60
14	18:11	0.5	16.5	0.8	1.60
15	18:12	0.5	17.3	0.8	1.60
16	18:12	0.5	18.1	0.8	1.60
17	18:13	0.5	18.9	0.8	1.60
18	18:13	0.5	19.7	0.8	1.60
19	18:14	0.5	20.5	0.8	1.60
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 1.60

Saturated Hydraulic Conductivity, K_s: -2.87E-03 cm/min or -4.78E-05 cm/sec
Matrix Flux Potential, Φ_m: 7.1E-01 cm^2/min or 1.19E-02 cm^2/sec
Alpha Parameter, α: -0.00402 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-5A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:46	-	8.1	-	-
2	14:46	0.5	8.9	0.8	1.60
3	14:47	0.5	9.6	0.7	1.40
4	14:47	0.5	10.1	0.5	1.00
5	14:48	0.5	10.4	0.3	0.60
6	14:48	0.5	10.8	0.4	0.80
7	14:49	0.5	11.2	0.4	0.80
8	14:49	0.5	11.6	0.4	0.80
9	14:50	0.5	11.9	0.3	0.60
10	14:50	0.5	12.2	0.3	0.60
11	14:51	0.5	12.6	0.4	0.80
12	14:52	1	13.2	0.6	0.60
13	14:53	1	13.6	0.4	0.40
14	14:54	1	14.0	0.4	0.40
15	14:55	1	14.4	0.4	0.40
16	14:56	1	14.8	0.4	0.40
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:59	-	23.7	-	-
2	14:59	0.5	23.9	0.2	0.40
3	15:00	0.5	24.1	0.2	0.40
4	15:00	0.5	24.3	0.2	0.40
5	15:01	0.5	24.5	0.2	0.40
6	15:02	1	25.1	0.6	0.60
7	15:03	1	26.0	0.9	0.90
8	15:04	1	27.0	1.0	1.00
9	15:05	1	28.1	1.1	1.10
10	15:06	1	29.2	1.1	1.10
11	15:07	1	30.3	1.1	1.10
12	15:08	1	31.4	1.1	1.10
13	15:09	1	32.5	1.1	1.10
14	15:10	1	33.6	1.1	1.10
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 1.10

Saturated Hydraulic Conductivity, K_s: 7.51E-02 cm/min or 1.25E-03 cm/sec
Matrix Flux Potential, Φ_m: -3.5E-01 cm^2/min or -5.82E-03 cm^2/sec
Alpha Parameter, α: -0.21508 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-5B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-5B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 18 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:15	-	4.8	-	-
2	15:16	1	5.4	0.6	0.60
3	15:17	1	5.9	0.5	0.50
4	15:18	1	6.4	0.5	0.50
5	15:19	1	6.9	0.5	0.50
6	15:20	1	7.3	0.4	0.40
7	15:21	1	7.7	0.4	0.40
8	15:22	1	8.1	0.4	0.40
9	15:23	1	8.5	0.4	0.40
10	15:24	1	8.8	0.3	0.30
11	15:25	1	9.1	0.3	0.30
12	15:26	1	9.4	0.3	0.30
13	15:27	1	9.7	0.3	0.30
14	15:28	1	10.0	0.3	0.30
15	15:29	1	10.3	0.3	0.30
16	15:30	1	10.6	0.3	0.30
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.30

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:31	-	18.4	-	-
2	15:32	1	19.3	0.9	0.90
3	15:33	1	19.5	0.2	0.20
4	15:34	1	19.7	0.2	0.20
5	15:35	1	20.0	0.3	0.30
6	15:36	1	20.5	0.5	0.50
7	15:37	1	21.0	0.5	0.50
8	15:38	1	21.5	0.5	0.50
9	15:39	1	22.0	0.5	0.50
10	15:40	1	22.5	0.5	0.50
11	15:41	1	23.0	0.5	0.50
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.50

Saturated Hydraulic Conductivity, K_s: 1.29E-02 cm/min or 2.15E-04 cm/sec
Matrix Flux Potential, Φ_m: 7.9E-02 cm^2/min or 1.32E-03 cm^2/sec
Alpha Parameter, α: 0.162845 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-5C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-5C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 22 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:50	-	3.5	-	-
2	15:55	5	3.5	0.0	0.00
3	16:00	5	3.5	0.0	0.00
4	16:05	5	3.5	0.0	0.00
5	16:10	5	3.5	0.0	0.00
6	16:15	5	3.5	0.0	0.00
7	16:20	5	3.5	0.0	0.00
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-6A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-6A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 19 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:36	-	7.8	-	-
2	08:36	0.5	8.5	0.7	1.40
3	08:37	0.5	9.3	0.8	1.60
4	08:37	0.5	9.9	0.6	1.20
5	08:38	0.5	10.5	0.6	1.20
6	08:38	0.5	11.1	0.6	1.20
7	08:39	0.5	11.7	0.6	1.20
8	08:39	0.5	12.4	0.7	1.40
9	08:40	0.5	13.0	0.6	1.20
10	08:40	0.5	13.5	0.5	1.00
11	08:41	0.5	13.9	0.4	0.80
12	08:41	0.5	14.4	0.5	1.00
13	08:42	0.5	14.9	0.5	1.00
14	08:42	0.5	15.4	0.5	1.00
15	08:43	0.5	15.9	0.5	1.00
16	08:43	0.5	16.4	0.5	1.00
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	08:45	-	23.8	-	
2	08:45	0.5	25.5	1.7	3.40
3	08:46	0.5	26.7	1.2	2.40
4	08:46	0.5	27.9	1.2	2.40
5	08:47	0.5	29.1	1.2	2.40
6	08:47	0.5	30.3	1.2	2.40
7	08:48	0.5	31.5	1.2	2.40
8	08:48	0.5	32.7	1.2	2.40
9	08:49	0.5	33.9	1.2	2.40
10	08:49	0.5	35.1	1.2	2.40
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.40

Saturated Hydraulic Conductivity, K_s: 1.41E-01 cm/min or 2.35E-03 cm/sec
Matrix Flux Potential, Φ_m: -5.1E-01 cm^2/min or -8.43E-03 cm^2/sec
Alpha Parameter, α: -0.2788 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-6B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:08	-	6.1	-	-
2	09:08	0.5	6.9	0.8	1.60
3	09:09	0.5	7.5	0.6	1.20
4	09:09	0.5	8.3	0.8	1.60
5	09:10	0.5	8.8	0.5	1.00
6	09:10	0.5	9.4	0.6	1.20
7	09:11	0.5	10.0	0.6	1.20
8	09:11	0.5	10.5	0.5	1.00
9	09:12	0.5	11.0	0.5	1.00
10	09:12	0.5	11.5	0.5	1.00
11	09:13	0.5	11.9	0.4	0.80
12	09:13	0.5	12.3	0.4	0.80
13	09:14	0.5	12.7	0.4	0.80
14	09:14	0.5	13.2	0.5	1.00
15	09:15	0.5	13.6	0.4	0.80
16	09:15	0.5	14.0	0.4	0.80
17	09:16	0.5	14.4	0.4	0.80
18	09:16	0.5	14.8	0.4	0.80
19	09:17	0.5	15.2	0.4	0.80
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.80

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:18	-	20.8	-	
2	09:18	0.5	21.7	0.9	1.80
3	09:19	0.5	22.6	0.9	1.80
4	09:19	0.5	23.5	0.9	1.80
5	09:20	0.5	24.3	0.8	1.60
6	09:20	0.5	25.1	0.8	1.60
7	09:21	0.5	25.9	0.8	1.60
8	09:21	0.5	26.6	0.7	1.40
9	09:22	0.5	27.2	0.6	1.20
10	09:22	0.5	28.0	0.8	1.60
11	09:23	0.5	28.7	0.7	1.40
12	09:23	0.5	29.4	0.7	1.40
13	09:24	0.5	30.1	0.7	1.40
14	09:24	0.5	30.8	0.7	1.40
15	09:25	0.5	31.5	0.7	1.40
16	09:25	0.5	32.2	0.7	1.40
17	09:26	0.5	32.9	0.7	1.40
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 1.40

Saturated Hydraulic Conductivity, K_s: 3.94E-02 cm/min or 6.56E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.1E-01 cm^2/min or 1.83E-03 cm^2/sec
Alpha Parameter, α: 0.358829 1/cm

Guelph Infiltrometer Calculation Sheet - CT#3B-6C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#3B-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Both
Reservoir Constant: 35.39 cm^2
Well Radius: 3 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:42	-	5.5	-	-
2	09:42	0.5	6.4	0.9	1.80
3	09:43	0.5	7.2	0.8	1.60
4	09:43	0.5	8.0	0.8	1.60
5	09:44	0.5	8.7	0.7	1.40
6	09:44	0.5	9.5	0.8	1.60
7	09:45	0.5	10.4	0.9	1.80
8	09:45	0.5	11.3	0.9	1.80
9	09:46	0.5	12.0	0.7	1.40
10	09:46	0.5	12.7	0.7	1.40
11	09:47	0.5	13.4	0.7	1.40
12	09:47	0.5	14.1	0.7	1.40
13	09:48	0.5	14.8	0.7	1.40
14	09:48	0.5	15.5	0.7	1.40
15	09:49	0.5	16.2	0.7	1.40
16	09:49	0.5	16.9	0.7	1.40
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.40

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:51	-	25.4	-	
2	09:51	0.5	26.7	1.3	2.60
3	09:52	0.5	28.0	1.3	2.60
4	09:52	0.5	29.4	1.4	2.80
5	09:53	0.5	30.8	1.4	2.80
6	09:53	0.5	32.2	1.4	2.80
7	09:54	0.5	33.5	1.3	2.60
8	09:54	0.5	34.9	1.4	2.80
9	09:55	0.5	36.3	1.4	2.80
10	09:55	0.5	37.7	1.4	2.80
11	09:56	0.5	39.0	1.3	2.60
12	09:56	0.5	40.3	1.3	2.60
13	09:57	0.5	41.6	1.3	2.60
14	09:57	0.5	42.9	1.3	2.60
15	09:58	0.5	44.2	1.3	2.60
16	09:58	0.5	45.5	1.3	2.60
17	09:59	0.5	46.8	1.3	2.60
18	09:59	0.5	48.1	1.3	2.60
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.60

Saturated Hydraulic Conductivity, K_s: 9.03E-02 cm/min or 1.50E-03 cm/sec
Matrix Flux Potential, Φ_m: 1.4E-02 cm^2/min or 2.35E-04 cm^2/sec
Alpha Parameter, α: 6.40279 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-1A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-1A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	17:53	-	0.5	-	-
2	17:58	5	0.5	0.0	0.00
3	18:03	5	0.5	0.0	0.00
4	18:08	5	0.5	0.0	0.00
5	18:13	5	0.5	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-1B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-1B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	18:15	-	3.1	-	-
2	18:19	4	9.7	6.6	1.65
3	18:23	4	12.8	3.1	0.78
4	18:27	4	13.9	1.1	0.28
5	18:31	4	16.6	2.7	0.68
6	18:35	4	20.2	3.6	0.90
7	18:39	4	24.4	4.2	1.05
8	18:43	4	27.7	3.3	0.83
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.93

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	18:44	-	8.4	-	
2	18:48	4	13.1	4.7	1.18
3	18:52	4	16.7	3.6	0.90
4	18:56	4	20.3	3.6	0.90
5	19:00	4	23.5	3.2	0.80
6	19:04	4	26.6	3.1	0.78
7	19:08	4	29.4	2.8	0.70
8	19:12	4	32.3	2.9	0.73
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.73

Saturated Hydraulic Conductivity, K_s: -4.13E-03 cm/min or -6.88E-05 cm/sec
Matrix Flux Potential, Φ_m: 6.6E-02 cm^2/min or 1.10E-03 cm^2/sec
Alpha Parameter, α: -0.06251 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-1C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-1C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:10	-	1.8	-	-
2	08:12	2	3.5	1.7	0.85
3	08:22	10	4.5	1.0	0.10
4	08:32	10	7.0	2.5	0.25
5	08:42	10	10.2	3.2	0.32
6	08:52	10	13.0	2.8	0.28
7	09:02	10	14.9	1.9	0.19
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.26

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:04	-	6.4	-	
2	09:06	2	11.0	4.6	2.30
3	09:10	4	13.3	2.3	0.58
4	09:14	4	14.8	1.5	0.38
5	09:18	4	16.3	1.5	0.38
6	09:22	4	17.7	1.4	0.35
7	09:26	4	18.3	0.6	0.15
8	09:30	4	19.3	1.0	0.25
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 0.25

Saturated Hydraulic Conductivity, K_s: -8.42E-04 cm/min or -1.40E-05 cm/sec
Matrix Flux Potential, Φ_m: 1.6E-02 cm^2/min or 2.70E-04 cm^2/sec
Alpha Parameter, α: -0.05203 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-2A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-2A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 4.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:08	-	6.4	-	-
2	08:09	1	17.4	11.0	11.00
3	08:10	1	25.2	7.8	7.80
4	08:11	1	31.2	6.0	6.00
5	08:12	1	35.6	4.4	4.40
6	08:13	1	39.5	3.9	3.90
7	08:14	1	42.9	3.4	3.40
8	08:15	1	46.0	3.1	3.10
9	08:16	1	48.9	2.9	2.90
10	08:17	1	51.6	2.7	2.70
11	08:18	1	54.1	2.5	2.50
12	08:19	1	56.6	2.5	2.50
13	08:20	1	58.9	2.3	2.30
14	08:21	1	61.0	2.1	2.10
15	08:22	1	63.2	2.2	2.20
16	08:23	1	65.3	2.1	2.10
17	08:24	1	67.4	2.1	2.10
18	08:25	1	69.4	2.0	2.00
19	08:26	1	72.4	3.0	3.00
20	08:27	1	74.3	1.9	1.90
21	08:28	1	76.3	2.0	2.00
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 2.19

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	08:31	-	5.9	-	
2	08:32	1	12.9	7.0	7.00
3	08:33	1	17.8	4.9	4.90
4	08:34	1	20.2	2.4	2.40
5	08:35	1	23.1	2.9	2.90
6	08:36	1	26.8	3.7	3.70
7	08:37	1	31.0	4.2	4.20
8	08:38	1	35.2	4.2	4.20
9	08:39	1	39.6	4.4	4.40
10	08:40	1	43.8	4.2	4.20
11	08:41	1	48.0	4.2	4.20
12	08:42	1	52.1	4.1	4.10
13	08:43	1	56.0	3.9	3.90
14	08:44	1	60.1	4.1	4.10
15	08:45	1	64.3	4.2	4.20
16	08:46	1	68.4	4.1	4.10
17	08:47	1	72.4	4.0	4.00
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 4.10

Saturated Hydraulic Conductivity, K_s: 8.29E-03 cm/min or 1.38E-04 cm/sec
Matrix Flux Potential, Φ_m: 1.2E-02 cm^2/min or 2.03E-04 cm^2/sec
Alpha Parameter, α: 0.681207 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-2B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	08:52	-	3.2	-	-
2	08:53	1	5.5	2.3	2.30
3	08:54	1	7.6	2.1	2.10
4	08:55	1	8.9	1.3	1.30
5	08:56	1	10.3	1.4	1.40
6	08:57	1	11.6	1.3	1.30
7	08:58	1	12.9	1.3	1.30
8	08:59	1	14.1	1.2	1.20
9	09:00	1	15.3	1.2	1.20
10	09:01	1	16.3	1.0	1.00
11	09:02	1	17.3	1.0	1.00
12	09:03	1	18.2	0.9	0.90
13	09:04	1	19.2	1.0	1.00
14	09:05	1	20.1	0.9	0.90
15	09:06	1	21.0	0.9	0.90
16	09:07	1	21.9	0.9	0.90
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.90

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	09:09	-	7.7	-	-
2	09:10	1	11.3	3.6	3.60
3	09:11	1	13.9	2.6	2.60
4	09:12	1	16.6	2.7	2.70
5	09:13	1	19.2	2.6	2.60
6	09:14	1	21.4	2.2	2.20
7	09:15	1	23.9	2.5	2.50
8	09:16	1	25.8	1.9	1.90
9	09:17	1	28.1	2.3	2.30
10	09:18	1	30.3	2.2	2.20
11	09:19	1	32.7	2.4	2.40
12	09:20	1	34.9	2.2	2.20
13	09:21	1	36.9	2.0	2.00
14	09:22	1	38.7	1.8	1.80
15	09:23	1	40.7	2.0	2.00
16	09:24	1	42.7	2.0	2.00
17	09:25	1	44.7	2.0	2.00
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.00

Saturated Hydraulic Conductivity, K_s: 6.38E-03 cm/min or 1.06E-04 cm/sec
Matrix Flux Potential, Φ_m: -1.7E-02 cm^2/min or -2.90E-04 cm^2/sec
Alpha Parameter, α: -0.36733 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-2B(40)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 40 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:24	-	7.4	-	-
2	13:26	2	9.8	2.4	1.20
3	13:28	2	11.4	1.6	0.80
4	13:30	2	13.4	2.0	1.00
5	13:32	2	15.0	1.6	0.80
6	13:34	2	16.1	1.1	0.55
7	13:36	2	17.2	1.1	0.55
8	13:38	2	18.9	1.7	0.85
9	13:40	2	19.7	0.8	0.40
10	13:42	2	20.5	0.8	0.40
11	13:44	2	20.9	0.4	0.20
12	13:46	2	21.5	0.6	0.30
13	13:48	2	22.1	0.6	0.30
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): 0.27

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:50	-	20.0	-	-
2	13:55	5	22.4	2.4	0.48
3	14:00	5	25.4	3.0	0.60
4	14:05	5	26.0	0.6	0.12
5	14:10	5	26.8	0.8	0.16
6	14:15	5	26.8	0.0	0.00
7	14:20	5	26.8	0.0	0.00
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): 0.09

Saturated Hydraulic Conductivity, K_s: -2.15E-03 cm/min or -3.58E-05 cm/sec **STOPPED DRAINING!**
Matrix Flux Potential, Φ_m: 2.7E-02 cm^2/min or 4.42E-04 cm^2/sec
Alpha Parameter, α: -0.08082 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-2B(60)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-2B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 60 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:32	-	6.5	-	-
2	15:37	5	6.5	0.0	0.00
3	15:42	5	6.5	0.0	0.00
4	15:47	5	6.5	0.0	0.00
5	15:52	5	6.5	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-2C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-2C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:38	-	1.7	-	-
2	09:43	5	1.7	0.0	0.00
3	09:48	5	1.7	0.0	0.00
4	09:53	5	1.7	0.0	0.00
5	09:58	5	1.7	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-3A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-3A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:00	-	5.1	-	-
2	10:05	5	5.1	0.0	0.00
3	10:10	5	5.1	0.0	0.00
4	10:15	5	5.1	0.0	0.00
5	10:20	5	5.1	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-3B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-3B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:26	-	1.1	-	-
2	10:31	5	1.1	0.0	0.00
3	10:36	5	1.1	0.0	0.00
4	10:41	5	1.1	0.0	0.00
5	10:46	5	1.1	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-3C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	10:50	-	3.2	-	-
2	10:55	5	3.2	0.0	0.00
3	11:00	5	3.2	0.0	0.00
4	11:05	5	3.2	0.0	0.00
5	11:10	5	3.2	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R1): #DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Steady rate for 3 consecutive readings (R2): #DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-3C(40)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 40 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:05	-	2.9	-	-
2	13:10	5	2.9	0.0	0.00
3	13:15	5	2.9	0.0	0.00
4	13:20	5	2.9	0.0	0.00
5	13:25	5	2.9	0.0	0.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	#DIV/0!

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-3C(60)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-3C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 60 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:20	-	6.9	-	-
2	14:24	4	9.1	2.2	0.55
3	14:29	5	11.0	1.9	0.38
4	14:34	5	13.1	2.1	0.42
5	14:39	5	17.2	4.1	0.82
6	14:44	5	20.2	3.0	0.60
7	14:49	5	23.1	2.9	0.58
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.56

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	14:50	-		-	-
2	15:03	13	3.2	3.2	0.25
3	15:08	5	4.8	1.6	0.32
4	15:13	5	6.0	1.2	0.24
5	15:18	5	9.0	3.0	0.60
6	15:23	5	10.1	1.1	0.22
7	15:28	5	11.4	1.3	0.26
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.33

Saturated Hydraulic Conductivity, K_s: -3.40E-03 cm/min or -5.67E-05 cm/sec
Matrix Flux Potential, Φ_m: 4.7E-02 cm^2/min or 7.84E-04 cm^2/sec
Alpha Parameter, α: -0.07237 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-4A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-4A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:44	-	1.3	-	-
2	12:48	4	4.3	3.0	0.75
3	12:52	4	6.4	2.1	0.53
4	12:56	4	7.8	1.4	0.35
5	13:00	4	9.2	1.4	0.35
6	13:04	4	10.3	1.1	0.28
7	13:08	4	11.7	1.4	0.35
8	13:12	4	12.5	0.8	0.20
9	13:16	4	13.9	1.4	0.35
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.30

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	13:18	-	5.5	-	-
2	13:20	2	8.9	3.4	1.70
3	13:22	2	11.3	2.4	1.20
4	13:24	2	13.8	2.5	1.25
5	13:26	2	16.4	2.6	1.30
6	13:28	2	18.8	2.4	1.20
7	13:30	2	20.9	2.1	1.05
8	13:32	2	22.6	1.7	0.85
9	13:35	3	25.0	2.4	0.80
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.90

Saturated Hydraulic Conductivity, K_s: 4.01E-03 cm/min or 6.69E-05 cm/sec
Matrix Flux Potential, Φ_m: -2.1E-02 cm^2/min or -3.43E-04 cm^2/sec
Alpha Parameter, α: -0.19481 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-4B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-4B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:38	-	3.7	-	-
2	13:43	5	3.7	0.0	0.00
3	13:48	5	3.7	0.0	0.00
4	13:53	5	3.7	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-4C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-4C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	13:56	-	3.4	-	-
2	14:01	5	3.4	0.0	0.00
3	14:06	5	3.4	0.0	0.00
4	14:11	5	3.4	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-5A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-5A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	11:12	-	3.3	-	-
2	11:14	2	7.1	3.8	1.90
3	11:16	2	10.1	3.0	1.50
4	11:18	2	15.0	4.9	2.45
5	11:20	2	17.5	2.5	1.25
6	11:22	2	19.6	2.1	1.05
7	11:24	2	20.5	0.9	0.45
8	11:26	2	24.7	4.2	2.10
9	11:28	2	27.1	2.4	1.20
10	11:30	2	30.0	2.9	1.45
11	11:32	2	32.5	2.5	1.25
12	11:34	2	36.3	3.8	1.90
13	11:36	2	38.7	2.4	1.20
14	11:38	2	42.5	3.8	1.90
15	11:40	2	45.5	3.0	1.50
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.53

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	11:41	-	14.8	-	-
2	11:42	1	25.8	11.0	11.00
3	11:42	0.5	30.1	4.3	8.60
4	11:43	0.5	32.6	2.5	5.00
5	11:43	0.5	36.6	4.0	8.00
6	11:44	0.5	40.9	4.3	8.60
7	11:44	0.5	44.1	3.2	6.40
8	11:45	0.5	47.5	3.4	6.80
9	11:45	0.5	50.7	3.2	6.40
10	11:46	0.5	53.6	2.9	5.80
11	11:46	0.5	56.0	2.4	4.80
12	11:47	0.5	58.7	2.7	5.40
13	11:47	0.5	59.3	0.6	1.20
14	11:48	0.5	60.9	1.6	3.20
15	11:48	0.5	62.6	1.7	3.40
16	11:49	1	66.4	3.8	3.80
17	11:50	1	70.0	3.6	3.60
18	11:51	1	73.7	3.7	3.70
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.70

Saturated Hydraulic Conductivity, K_s: 1.32E-02 cm/min or 2.21E-04 cm/sec
Matrix Flux Potential, Φ_m: -4.8E-02 cm^2/min or -8.03E-04 cm^2/sec
Alpha Parameter, α: -0.2748 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-5B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-5B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:04	-	8.5	-	-
2	16:06	2	21.8	13.3	6.65
3	16:08	2	25.1	3.3	1.65
4	16:10	2	27.0	1.9	0.95
5	16:12	2	29.5	2.5	1.25
6	16:14	2	31.8	2.3	1.15
7	16:16	2	34.1	2.3	1.15
8	16:18	2	36.0	1.9	0.95
9	16:20	2	37.9	1.9	0.95
10	16:22	2	38.7	0.8	0.40
11	16:24	2	40.4	1.7	0.85
12	16:26	2	42.2	1.8	0.90
13	16:28	2	44.2	2.0	1.00
14	16:30	2	46.0	1.8	0.90
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.93

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	16:32	-	4.8	-	-
2	16:36	4	14.1	9.3	2.33
3	16:37	1	23.9	9.8	9.80
4	16:38	1	27.9	4.0	4.00
5	16:39	1	31.4	3.5	3.50
6	16:40	1	35.3	3.9	3.90
7	16:41	1	39.0	3.7	3.70
8	16:42	1	42.6	3.6	3.60
9	16:43	1	45.8	3.2	3.20
10	16:44	1	49.0	3.2	3.20
11	16:46	2	54.2	5.2	2.60
12	16:47	1	57.0	2.8	2.80
13	16:48	1	60.4	3.4	3.40
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				3.00

Saturated Hydraulic Conductivity, K_s: 1.41E-02 cm/min or 2.35E-04 cm/sec
Matrix Flux Potential, Φ_m: -7.7E-02 cm^2/min or -1.28E-03 cm^2/sec
Alpha Parameter, α: -0.18366 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-5C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-5C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	16:50	-	2.4	-	-
2	16:57	7	4.5	2.1	0.30
3	17:02	5	8.2	3.7	0.74
4	17:07	5	11.1	2.9	0.58
5	17:12	5	15.0	3.9	0.78
6	17:17	5	18.4	3.4	0.68
7	17:22	5	21.6	3.2	0.64
8	17:27	5	24.7	3.1	0.62
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.65

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	17:29	-	7.5	-	-
2	17:31	2	21.7	14.2	7.10
3	17:33	2	29.6	7.9	3.95
4	17:35	2	35.5	5.9	2.95
5	17:37	2	40.2	4.7	2.35
6	17:39	2	46.2	6.0	3.00
7	17:41	2	50.5	4.3	2.15
8	17:43	2	54.9	4.4	2.20
9	17:45	2	59.0	4.1	2.05
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				2.13

Saturated Hydraulic Conductivity, K_s: 1.02E-02 cm/min or 1.70E-04 cm/sec
Matrix Flux Potential, Φ_m: -5.7E-02 cm^2/min or -9.45E-04 cm^2/sec
Alpha Parameter, α: -0.1802 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-6A

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-6A
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:30	-	9.2	-	-
2	14:35	5	9.2	0.0	0.00
3	14:40	5	9.2	0.0	0.00
4	14:45	5	9.2	0.0	0.00
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	0.00

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #DIV/0! cm/min or #DIV/0! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #DIV/0! cm^2/min or #DIV/0! cm^2/sec
Alpha Parameter, α: #DIV/0! 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-6B

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-6B
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	14:46	-	6.2	-	-
2	14:48	2	10.4	4.2	2.10
3	14:50	2	12.5	2.1	1.05
4	14:52	2	13.4	0.9	0.45
5	14:54	2	14.3	0.9	0.45
6	14:56	2	14.9	0.6	0.30
7	14:58	2	15.3	0.4	0.20
8	15:00	2	15.9	0.6	0.30
9	15:02	2	16.5	0.6	0.30
10	15:04	2	16.9	0.4	0.20
11	15:06	2	17.4	0.5	0.25
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.25

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:10	-	6.6	-	-
2	15:15	5	7.7	1.1	0.22
3	15:20	5	8.6	0.9	0.18
4	15:25	5	9.6	1.0	0.20
5	15:30	5	10.7	1.1	0.22
6	15:35	5	11.9	1.2	0.24
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.22

Saturated Hydraulic Conductivity, K_s: -9.40E-04 cm/min or -1.57E-05 cm/sec
Matrix Flux Potential, Φ_m: 1.6E-02 cm^2/min or 2.75E-04 cm^2/sec
Alpha Parameter, α: -0.05706 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-6C

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-6C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 20 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	15:39	-	8.1	-	-
2	15:41	2	14.1	6.0	3.00
3	15:43	2	18.3	4.2	2.10
4	15:45	2	21.0	2.7	1.35
5	15:47	2	24.4	3.4	1.70
6	15:49	2	26.5	2.1	1.05
7	15:51	2	29.3	2.8	1.40
8	15:53	2	31.9	2.6	1.30
9	15:55	2	34.4	2.5	1.25
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				1.32

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	15:57	-	12.4	-	-
2	16:01	4	18.8	6.4	1.60
3	16:03	2	21.9	3.1	1.55
4	16:05	2	25.2	3.3	1.65
5	16:07	2	26.4	1.2	0.60
6	16:09	2	28.9	2.5	1.25
7	16:11	2	32.5	3.6	1.80
8	16:13	2	35.1	2.6	1.30
9	16:15	2	37.5	2.4	1.20
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				1.39

Saturated Hydraulic Conductivity, K_s: -3.10E-03 cm/min or -5.17E-05 cm/sec
Matrix Flux Potential, Φ_m: 7.2E-02 cm^2/min or 1.20E-03 cm^2/sec
Alpha Parameter, α: -0.04293 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-6C(40)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-6C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 40 cm

H1: 5 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	12:03	-	5.9	-	-
2	12:08	5	7.1	1.2	0.24
3	12:13	5	7.7	0.6	0.12
4	12:18	5	8.3	0.6	0.12
5	12:23	5	8.4	0.0	0.01
6	12:28	5	8.4	0.1	0.01
7					
8	stopped draining ...				
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R1):				0.01

H2: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1	12:30	-	10.5	-	-
2	12:35	5	13.7	3.2	0.64
3	12:40	5	16.9	3.2	0.64
4	12:45	5	18.6	1.7	0.34
5	12:50	5	19.8	1.2	0.24
6	12:55	5	20.8	1.0	0.20
7	13:00	5	21.8	1.0	0.20
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	Steady rate for 3 consecutive readings (R2):				0.21

Saturated Hydraulic Conductivity, K_s: 1.62E-03 cm/min or 2.69E-05 cm/sec
Matrix Flux Potential, Φ_m: -1.2E-02 cm^2/min or -2.05E-04 cm^2/sec
Alpha Parameter, α: -0.13111 1/cm

Guelph Infiltrometer Calculation Sheet - CT#4-6C(60)

Location: Vangorda Waste Rock Dump
Date:
Test-Pit-No: CT#4-6C
Operator: Karin Wagner
Dominant Soil Type:

Reservoirs (Inner or Both): Inner
Reservoir Constant: 2.14 cm^2
Well Radius: 3.5 cm
Depth of Well Hole: 60 cm

H1: 10 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R1
#	min	min	cm	cm	cm/min
1	09:30	-	8.9	-	-
2	09:35	5	8.9	0.0	0.00
3	09:40	5	8.9	0.0	0.00
4	09:45	5	8.9	0.0	0.00
5	09:50	5	8.9	0.0	0.00
6	09:55	5	8.9	0.0	0.00
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
				Steady rate for 3 consecutive readings (R1):	0.00

H2: 15 cm

Reading	Time t	Δt	Water Level	Level Change	Rate of change, R2
#	min	min	cm	cm	cm/min
1					
2					
3					
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30					
				Steady rate for 3 consecutive readings (R2):	#DIV/0!

Saturated Hydraulic Conductivity, K_s: #VALUE! cm/min or #VALUE! cm/sec **NOT DRAINING!**
Matrix Flux Potential, Φ_m: #VALUE! cm^2/min or #VALUE! cm^2/sec
Alpha Parameter, α: #VALUE! 1/cm

Appendix G:
In-Situ Density Data Sheets

EBA Engineering

DENSITY TEST RESULTS

ASTM Designation D2922 & D3017, or D1556

Project No: **1200091.029**

Project: Vangorda Cover Trial

Client: **S.R.K.**
VANCOUVER, BC

Att'n: **Mr. Peter Healy**

Test Apparatus : Nuclear Machine No: 7866

Soil Description: GRAVEL, SAND AND SILT

Temperature Air: _____ °C Soil: _____ °C

Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
172/200	Pad CT#4	GR	5.4	2090	98.1
173/200	Pad CT#4	GR	5.2	1991	93.5
174/200	Pad CT#4	GR	4.0	2071	97.2
175/200	Pad CT#4	GR	5.4	2135	100.2
176/200	Pad CT#4	GR	5.1	2096	98.4
177/200	Pad CT#4	GR	5.2	2079	97.6
178/200	Pad CT#4	GR	4.6	2139	100.4
179/200	Pad CT#4	GR	5.0	2170	101.9
180/200	Pad CT#4	GR	5.6	2023	95.0
181/200	Pad CT#4	GR	4.5	2223	102.0+
182/200	Pad CT#4	GR	5.2	2089	98.1
183/200	Pad CT#4	GR	5.2	2022	94.9
184/200	Pad CT#4	GR	3.9	2114	99.2
185/200	Pad CT#4	GR	5.0	2049	96.2
186/200	Pad CT#4	GR	4.4	2133	100.1
187/200	Pad CT#3A	GR	2.9	1972	92.6

Remarks: _____

Reviewed By: _____

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Mr. Peter Healy
S.R.K.
VANCOUVER, BC

EBA Engineering

DENSITY TEST RESULTS

ASTM Designation D2922 & D3017, or D1556

Project No: **1200091.029**

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Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
188 /200	Pad CT#3A	GR	2.5	1951	91.6
189 /200	Pad CT #3A	GR	2.8	1920	90.1
190 /200	Pad CT#3A	GR	2.5	1898	89.1
191 /200	Pad CT#3A	GR	2.1	2031	95.4
192 /200	Pad CT#3A	GR	2.6	1953	91.7
193 /200	Pad CT#3A	GR	3.3	1977	92.8
194 /200	Pad CT#3A	GR	2.9	1875	88.0
195 /200	Pad CT#3A	GR	4.8	1889	88.7
196 /200	Pad CT#3A	GR	2.5	1966	92.3
197 /200	Pad CT#3A	GR	2.5	1938	91.0
198 /200	Pad CT#3A	GR	3.1	1951	91.6
199 /200	Pad CT#3A	GR	2.5	2159	101.4
200 /200	Pad CT#3A	GR	2.8	1958	91.9
201 /200	Pad CT#3A	GR	2.5	1896	89.0
202 /200	Pad CT#3A	GR	2.5	1973	92.6
203 /200	Pad CT#3A	GR	3.1	2059	96.7

Remarks: _____

Reviewed By: _____

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Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
204 /200	Pad CT#3A	GR	3.1	1962	92.1
205 /200	Pad CT#3B	GR	2.7	2041	95.8
206 /200	Pad CT#3B	GR	2.4	2090	98.1
207 /200	Pad CT#3B	GR	2.5	1955	91.8
208 /200	Pad CT#3B	GR	2.9	1919	90.1
209 / 200	Pad CT#3B	GR	2.5	1934	90.8
210 /200	Pad CT#3B	GR	3.1	1942	91.2
211 /200	Pad CT#3B	GR	3.1	1950	91.5
212 /200	Pad CT#3B	GR	3.1	1919	90.1
213 /200	Pad CT#3B	GR	2.5	1955	91.8
214 /200	Pad CT#3B	GR	3.0	1984	93.1
215 /200	Pad CT#3B	GR	5.8	1927	90.5
216 / 200	Pad CT#3B	GR	3.9	1877	88.1
217 /200	Pad CT#3B	GR	2.6	2049	96.2
218 /200	Pad CT#3B	GR	2.6	2035	95.5
219 /200	Pad CT#3B	GR	2.2	2065	96.9

Remarks: _____

Reviewed By: _____

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Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
220 /200	Pad CT#3B	GR	2.1	2066	97.0
221 /200	Pad CT#3B	GR	2.4	1929	90.6
222 /200	Pad CT#3B	GR	2.4	2025	95.1
223 /200	Pad CT#1	GR	6.0	1999	93.8
224 /200	Pad CT#1	GR	5.1	2074	97.4
225 /200	Pad CT#1	GR	5.8	2095	98.4
226 /200	Pad CT#1	GR	6.7	2027	95.2
227 /200	Pad CT#1	GR	6.4	2012	94.5
228 /200	Pad CT#1	GR	7.6	2028	95.2
229 /200	Pad CT#1	GR	5.9	2007	94.2
230 /200	Pad CT#1	GR	6.4	1976	92.8
231 /200	Pad CT#1	GR	6.1	1948	91.5
232 /200	Pad CT#1	GR	5.8	1826	85.7
233 /200	Pad CT#1	GR	7.6	1821	85.5
234 /200	Pad CT#1	GR	5.9	2010	94.4
235 /200	Pad CT#1	GR	7.0	2009	94.3

Remarks: _____

Reviewed By: _____

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DENSITY TEST RESULTS

ASTM Designation D2922 & D3017, or D1556

Project No: **1200091.029**

Project: Vangorda Cover Trial

Client: **S.R.K.**
VANCOUVER, BC

Att'n: **Mr. Peter Healy**

Test Apparatus : Nuclear Machine No: 7866

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Temperature Air: _____ °C Soil: _____ °C

Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
236/200	Pad CT#1	GR	7.1	2095	98.4
237/200	Pad CT#1	GR	5.4	1982	93.1
238/200	Pad CT#1	GR	6.3	2050	96.2
239/200	Pad CT#1	GR	7.1	2025	95.1
240/200	Pad CT#1	GR	5.4	2098	98.5
241/200	Pad CT#2B	GR	5.3	2119	99.5
242/200	Pad CT#2B	GR	4.9	2172	102.0+
243/200	Pad CT#2B	GR	5.7	2101	98.6
244/200	Pad CT#2B	GR	4.7	2108	99.0
245/200	Pad CT#2B	GR	5.8	2128	99.9
246/200	Pad CT#2B	GR	6.1	2106	98.9
247/200	Pad CT#2B	GR	4.9	2090	98.1
248/200	Pad CT#2B	GR	5.6	2017	94.7
249/200	Pad CT#2B	GR	5.3	2094	98.3
250/200	Pad CT#2B	GR	5.8	2117	99.4
251/200	Pad CT#2B	GR	5.1	2087	98.0

Remarks: _____

Reviewed By: _____

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Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
252 /200	Pad CT#2B	GR	3.4	2250	102.0+
253 /200	Pad CT#2B	GR	6.4	1922	90.2
254 /200	Pad CT#2B	GR	5.7	2074	97.4
255 /200	Pad CT#2B	GR	4.7	2099	98.5
256 /200	Pad CT#2A	GR	6.0	2115	99.3
257 /200	Pad CT#2A	GR	5.6	2105	98.8
258 /200	Pad CT#2A	GR	5.6	2111	99.1
259 /200	Pad CT#2A	GR	5.8	2010	94.4
260 /200	Pad CT#2A	GR	5.9	2010	94.4
261 /200	Pad CT#2A	GR	5.7	2117	99.4
262 /200	Pad CT#2A	GR	5.6	2066	97.0
263 /200	Pad CT#2A	GR	6.0	2119	99.5
264 /200	Pad CT#2A	GR	4.0	2233	102.0+
265 /200	Pad CT#2A	GR	5.6	2127	99.9
266 /200	Pad CT#2A	GR	5.9	2087	98.0
267 /200	Pad CT#2A	GR	5.7	2084	97.8

Remarks: _____

Reviewed By: _____

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Temperature Air: _____ °C Soil: _____ °C

Specified Compaction: 95.0

Compaction Standard: Standard Proctor

Minimum Dry Density: _____

Maximum Dry Density: **2130**

Optimum M.C.: 9.5

Date Tested: **2005.08.05** By: JP

Test No./ Probe Depth	Location	Elevation	% Moisture Content	Dry Density Kg/m^3	% Compaction
268 /200	Pad CT#2A	GR	5.0	2086	97.9
269 /200	Pad CT#2A	GR	4.5	2128	99.9
270 /200	Pad CT#2A	GR	5.8	2048	96.2

Remarks: _____

Reviewed By: _____

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