Design Hydrogeologic Study

Prepared for

Wayne County Subtitle D Landfill, Phase 3
Dudley, Wayne County, North Carolina

MESCO Project Number: G06096.6

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Municipal Engineering Services Company, P.A.
Garner, Boone and Morehead City, North Carolina

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1.0 INTRODUCTION

1.1 Purpose and Scope of Study

This study was undertaken, as part of the Permit to Construct, to define with borings, piezometers and laboratory testing, the soil, rock type, and condition of the uppermost aquifer regime at the Phase 3 area (study area)[*] of the Wayne County Subtitle D Municipal Solid Waste Landfill Facility (MSWLF) (facility)[†] located in Dudley, Wayne County, North Carolina. Furthermore, this study provides an understanding of the groundwater regime to local and hydrogeologic features. Data, conclusions, and recommendations for hydrologic and geologic conditions are provided to fulfill the requirements for the *Design Hydrogeologic Study* as described in the North Carolina Department of Environment and Natural Resources, Division of Waste Management (NCDENR), Solid Waste Section under rules 15A NCAC 13B.1623(b).

1.2 Facility Description

The facility is located at 460 B South Landfill Road approximately 2.7 miles northwest of Dudley, North Carolina and 7 miles southwest of Goldsboro along SR 1129. The facility lies within the Appalachian Coastal Plain physiographic province, a region that is characterized by flat to gently rolling topography dissected by drainage features with narrow to moderately sloped sides. The facility is bounded on the west by Edwards Branch and to the south by its unnamed tributary; woodlands and pastures provide boundaries to the north and east. Forested areas of deciduous and coniferous trees border the facility. The unnamed tributary separates the new lined landfill from the closed landfill. The landfill property consists of approximately 139.93 acres, with 65.3 acres designated for Municipal Solid Waste. The Phase 1 portion occupying ~23.0 acres was constructed in 1998. The Phase 2 portion occupies ~20.0 acres adjacent to Phase 1. The proposed Phase 3 portion will be ~20.3 acres in area. The remaining land will be used for the leachate lagoon and buffer. A facility map is included as Plate 1.

1.2.1 Drainage

Wayne County is located in the Neuse River Basin, which spans 6,235 square miles across north central and eastern North Carolina. The Neuse River originates at the confluence of the Flat and Eno Rivers, at the northwest terminus of Falls Lake Reservoir in Durham County, and traveling 248 miles to the Pamlico Sound (NCDWQ, see References).[0] The Neuse River travels between southwestern Goldsboro and Dudley about 2.5 miles north of the landfill facility. The primary drainage features for the landfill area are Edwards Branch and its unnamed tributary. Edwards Branch is a tributary of Thoroughfare Swamp that flows into Falling Creek, which subsequently joins the Neuse River. General surface drainage across the landfill property is to the

[*] The term study area is in reference to the area of investigation for this design study.
[†] The term facility is in reference to the entire permit boundary.

southwest towards Edwards Branch. Topographic relief across the landfill property is approximately 70-75 feet.

1.2.2 Facility History

The facility is located in a historically agricultural setting. The original permit to construct Phase 1 was issued July 1997, and the permit to operate was issued May 17, 1999. The lateral expansion permit for Phase 2 was issued in November 2003 with the permit to operate being issued June 2, 2004. Separated from the new MSW landfill by the unnamed tributary of Edwards Branch is the closed unlined landfill; the eastern unit ceased operation in October 1991 and the western unit in January 1998. The western unit was capped with cohesive clay completed January 1999. The existing unlined landfill is currently only accepting C&D waste in the area directly north of the scale house. The Phase 1 unit of the new lined landfill was completed in 1998 and the Phase 2 unit was completed in 2004.

2.0 FIELD INVESTIGATION

As part of the subsurface field investigation twenty-five (25) soil borings (P3-1, P3-2S, P3-2D, P3-3, P3-4, P3-5, P3-6S, P3-6D, P3-7, P3-8, P3-9, P3-10S, P3-10D, P3-11S, P3-11D, P3-12, P3-13, P3-14, P3-15S, P3-15D, P3-16, P3-17, P3-18S, P3-18D, P3-19) were drilled in and around the study area from September 2006 through October 2006. The borings were performed in order to determine characteristics of subsurface conditions and to provide sampling and monitoring points for the collection of groundwater data. Boring locations were selected based upon topographical features, and on information obtained from the previous *Design Hydrogeologic Study* and *Site Study* reports.

A piezometer was installed in each boring and the locations surveyed by MESCO personnel in accordance with 15A NCAC 13B.1632. Ground elevations and top-of-casing (TOC) elevations surveyed from the piezometers were used to determine the potentiometric surface and groundwater flow characteristics at the site. Location of piezometers and borings are provided on Plate 2. Piezometer construction details are summarized in Table A-1. Boring logs, field boring notes, and well construction records are included in Appendix A.

Drilling activities were performed by Derry's Well Drilling[*] under the supervision of MESCO personnel, using a truck-mounted Mobile B-53 drill rig with 4¼-inch inside-diameter (ID) hollow stem auger (HSA). Following piezometer installation, water levels were measured on a monthly basis from October 2006 through October 2007. Data collected was utilized to construct a potentiometric surface contour map that represents the geometry of a stabilized water table surface at a fixed point in time, in addition to a water table that

[*] 44283-A NC Hwy. 24/27/73, Albemarle, NC 28002. Ph. (704) 982-3070

represents the seasonal high. The method for determining the long-term seasonal high is discussed in detail in Section 5.7.1. A single day map is available as Plate 3 and a Seasonal High Map is available as Plate 4A.

In each completed boring soil samples were collected using standard split-barrel sample tubes at approximate three-foot intervals from 0 to 10 feet below ground surface (bgs) and at five-foot intervals thereafter. Standard penetration tests (SPT) were conducted in conjunction with the split-barrel sampling in accordance with ASTM Test Procedure D 1586-84. Undisturbed soil samples were collected from select borings using Shelby tube samplers and sent to Geotechnics[*] for laboratory testing of geotechnical properties including grain size distribution, permeability, and soil classification. Details of the laboratory soil analyses are further discussed in Section 2.1.

In addition to the laboratory tests, MESCO personnel conducted field slug tests on the majority of the on-site piezometers to determine hydraulic conductivity values for the saturated portion of the aquifer within the study area. Details of slug tests are discussed in Section 4.4. MESCO field personnel logged all borings according to the Unified Soil Classification System (USCS). Soil samples were collected from each boring and sealed in containers for visual inspection. Soil sample color was defined using Munsell color chips to maintain consistency. Plate 6A and Plate 6B show four cross-sections (A, B, C, and D) of the landfill area with identified lithology information compiled from the field boring data.

2.1 Laboratory Tests

Five (5) undisturbed soil samples for laboratory analysis were collected using Shelby tubes from borings P3-2D, P3-4, P3-9 and P3-13. One (1) sample was collected from borings P3-2D, P3-4, and P3-13; two (2) samples were collected from boring P3-9. One (1) specimen was drawn from each sample in the laboratory tested in accordance with the ASTM Standards for the following soil properties:

1. Grain size analysis using sieves and hydrometer (ASTM D 422-63)
2. Water content (ASTM D 854-92)
3. Atterberg limits (ASTM D 4318-96)
4. Specific gravity (ASTM D 854-92)
5. Permeability and total porosity (ASTM D 5084-90)

Geotechnical laboratory test results are summarized in Table B-1. The original geotechnical laboratory test report is included in Appendix B.

[*] 2200 Westinghouse Blvd, Suite 105, Raleigh, NC 27604. Ph. (919) 876-0405

3.0 GEOLOGY

3.1 Local Geology

Wayne County, North Carolina is located in the Appalachian Coastal Plain physiographic province, a region that is characterized by flat to gently rolling topography dissected by drainage features with narrow to moderately sloped sides. The lithology underlying the facility and site vicinity is mapped as belonging to the Black Creek Formation (Brown, et al., 1985). The Black Creek Formation is described by Sohl & Owens (1991) as a late Mesozoic-age (Cretaceous) sedimentary formation consisting of black to dark grey thinly laminated clay with layers of sand, abundant mica and lignite with iron sulfides such as marcasite or pyrite. The thickness of the Black Creek in Mt. Olive, near Dudley, is approximately 211 feet. The upper 10 feet of the Black Creek formation (clay, silty clay, sandy clay) acts as a confining unit separating the overlying surficial aquifer from the underlying Black Creek aquifer (Winner & Coble, 1989).

A review of available geologic maps and literature did not indicate the presence of post-Mesozoic faulting in the Black Creek Formation within two hundred feet of the property (Johnson & Peebles, 1986). In addition, the site was not identified as being located within a known seismic impact zone, indicating that the area has less than a 10 percent probability that the maximum expected horizontal acceleration expressed as a percentage of the earth's gravitational pull (*g*) will exceed 0.10*g* in 250 years (Algermissen, et al; 1990).

Since the property is located in the Coastal Plain physiographic province a fracture trace study or rose diagram was not required, in accordance with Rule 15A NCAC 13B.1623 (a)(1).

3.1.1 Subsurface Soil Conditions

Sand with a minor silt clay mixture was the primary soil composition encountered during the subsurface investigation. Combinations of silt, sand and clay were found at the surface, with sand as the primary underlying soil containing lenses of clay. Soils were typically pale orange and yellow to varying shades of grey in color. The dark clay confining layer was found consistently across the landfill at elevations typically near 112 feet above MSL.

According to the regional soil survey by USDA the landfill and surrounding area has Wagram loamy sand, 0-6% slops (WaB), Troup Sand (Tr), and Lakeland Sand (La). The Troup Sand is the primary soil type of the area, followed by the Wagram loamy sand, 0-6% slopes, with the Lakeland Sand being present west of the landfill facility. All three soils are sandy and/or loamy marine deposits or aeolian sands.

Standard penetration tests (SPT) were conducted on all borings. SPT blow counts, as measure per foot, usually fluctuated from 2-34, with most of the numbers ranging between 4 and 20. On one occasion (P3-18D)

the SPT blow count reached 85, at the location of the cohesive, dark, clay, confining layer. SPT counts in the top 5 to 8 feet were not always lower than those encountered at depth, with the largest SPT counts being encountered at 5 feet in some borings. Except for one instance of dark clay in boring P3-18D, SPT counts of 50+ blows per 6-inch interval were not encountered.

3.1.2 Subsurface Lithological Conditions

The geology of the site has been previously described as having unnamed surficial sediments overlying the Cretaceous Black Creek Formation. The sediments are made up of white to gray sand that overlies red to orange silty sand with layers of clay. Approximately 10 feet of clay, silty clay or sandy clay at the top of the Black Creek Formation acts as the Black Creek confining unit separating the overlying surficial aquifer from the underlying Black Creek aquifer (Winner & Coble, 1990). The Black Creek formation consists of thinly laminated gray to black clay interbedded with gray to tan fine to medium grained sand. The clays and sands of the Black Creek formation contain lignitic wood, occasional shell fragments, and glauconite. Cross-sections, provided as Plates 6A and 6B, depict the geology encountered during the subsurface investigation and show the confining layer encountered below the site. A regional characterization map is also included as Plate 5.

4.0 HYDROGEOLOGY

4.1 Stream Trace Analysis

According to 15A NCAC 13B.1623 (a)(1) no fracture trace analysis or rose diagram is required for sites located within the Coastal Plain physiographic province.

4.2 Total Porosity and Effective Porosity

The *porosity* of a porous medium is defined as the ratio of volume of the void space to the bulk volume (Bear, 1972). In this report, the term *total porosity* is used to signify the total pore space within a porous medium regardless of whether or not the pores are interconnected.

The total porosity of soil samples mentioned in Section 2.1 was calculated from their respective void ratios determined in the laboratory. The following formula was used to convert a void ratio (e) for each sample to its total porosity counterpart (n):

$$n = \frac{e}{1+e} \tag{1}$$

Table B-1 shows that the total porosities of the tested soils range from 17% to 52% yielding an average total porosity of 35.2% $\pm$ 2%. These porosity values are consistent with those published by Bear (1978), Freeze & Cherry (1979), and Domenico and Schwartz (1997). It must be noted that soil porosity is affected by soil grain

characteristics such as shape, arrangement, size distribution, packing of grains, and on the degree of compaction. Since compaction forces vary with depth porosity is also expected to vary with depth, especially in clay and shale units.

4.3 Effective Porosity

The term *effective porosity* is defined as the volume of the void spaces through which water or other fluids can travel in a rock or sediment, divided by the total volume of the solid matrix (Bear 1972). Effective porosity differs from the total porosity in that the effective porosity does not take into account disconnected or dead-end pores, while the total porosity is inclusive of all such pores. The effective porosity of a porous medium, therefore, never exceeds the total porosity of the same medium, and it is not uncommon in many natural settings to find the effective porosity of a soil being less than 50% of its total porosity counterpart. Occasionally the term *specific yield* is used in lieu of *effective porosity*, especially in older literature. For the purposes of this report the two terms are equivalent (Heath, 1980).

Grain size has a direct influence on effective porosity and soils responsiveness to fluid flow. Smaller grain sizes, such as clays, have more surface area available for the surface tension of water to adhere, reducing the soils responsiveness to fluid flow. This is reflected in the fact that clays, which consist of a mass of very fine particles, exhibit a gap between the total and effective porosities much larger than that of silt or sand.

4.3.1 Subsurface Soil Effective Porosity Method

One commonly used method of determining effective porosity of granular materials is from grain size distributions. Johnson (1967) compiled a number of published effective porosity values, and developed a relation between effective porosity values and grain size distribution by plotting percent sand, silt, and clay composition on a tri-linear graph (Johnson diagram). Although the Johnson diagram does not cover a large portion of sandy clay and clay materials, only one of the soils sampled from the study area fell under this region of “missing data”; therefore, the Johnson diagram was used in conjunction with published results to determine the effective porosities of the sampled soils.

Since the ASTM method used for grain size analysis uses particle-size categories different from those required for the Johnson diagram, the percent composition of each sample was recalculated according to the following particle-size classification system:

Particle size (millimeters)	
Sand	2 – 0.0625
Silt	0.0625 – 0.004
Clay	<0.004

This system conforms to the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology, and is widely adopted in many USGS publications. Table B-2 shows the manner in which the new particle size boundaries of the soil samples were interpolated from their grain size distribution table given by the laboratory.

Calculation of the accumulated percentage of soil particles finer than 0.0625 mm was performed using the accumulated percentages for the particle size boundaries of 0.0750 mm and 0.0275 mm determined from the sieve and hydrometer analyses (referred to as the Ref_1 and Ref_2, respectively, in Table B-2). Target accumulated percentage of the 0.0625 mm particle-size threshold were calculated from Ref_1 and Ref_2 via log-linear interpolation as follows:

$$C_{0.0625} = C_{0.0750} - (C_{0.0750} - C_{0.0275}) \times \frac{\log_{10} 0.0750 - \log_{10} 0.0625}{\log_{10} 0.0750 - \log_{10} 0.0275} \qquad (2)$$

where

$C_{0.0625}$ is the target-accumulated percentage

$C_{0.0750}$ is the % of grains sized 0.0750 mm retained

$C_{0.0275}$ is the % of grains sized 0.0275 mm retained

The new boundaries calculated in this manner were subsequently plugged into the Johnson tri-linear graph to determine a corresponding effective porosity value. This step was repeated for the samples from P3-4, P3-9 and P3-13 for their respective effective porosity value. Table B-3 presents all the effective porosity values determined using this method.

4.3.2 Results

The results of the soil effective porosity calculations are summarized in Table B-3. The effective porosity for soils collected in the study area range from 0.5% to 20.8%, yielding an arithmetic mean effective porosity of 9.38%. The effective porosity appears to be roughly proportional to the content of sand and inversely proportional to the content of clay. Johnson (1967) states that the average effective porosity from compiled studies as:

Material	Average Specific Yield
Clay	2
Silt	8
Sandy Clay	7
Fine Sand	21
Medium Sand	26
Coarse Sand	27

Average hydrogeological properties for each soil and rock lithology encountered are provided as Table 4.

4.4 Hydraulic Conductivity

Hydraulic conductivity (*K*) values for the unconfined aquifer at the proposed landfill site were determined from field slug tests performed on twenty-three (23) piezometers from December 2006 through March 2007. Piezometers that were tested were selected based on location, stratigraphic material, and accessibility. The following wells were tested: P3-1, P3-2S, P3-2D, P3-3, P3-4, P3-5, P3-6S, P3-6D, P3-7, P3-8, P3-9, P3-10S, P3-10D, P3-11S, P3-12, P3-13, P3-14, P3-15S, P3-15D, P3-16, P3-17, P3-18S. Each slug test was performed by creating nearly instantaneous changes in hydraulic head in the test wells, and recording the subsequent time recovery data using an electronic data logger* with built-in pressure transducer. The resulting time recovery data was analyzed using the methods of Bouwer & Rice (1976) and Bouwer (1989) to determine *K* values.

4.4.1 Slug Test Field Methods

Static water level was measured prior to proceeding with the test in order to ensure that the most current static water level was used for data analysis. Two types of slug tests, *falling head* and *rising head*, were performed depending on the initial static water depth with respect to the screened interval in each piezometer, and on the recharge rate of each piezometer.

When the static water level was above the top of the screen, a *falling head* test was performed by adding a volume of water to the piezometer to create an initial head change above the static level. The subsequent fall in water level in the well was then recorded. Falling head tests were not performed in wells were the static water level was below the top of the screened interval since use of the Bouwer and Rice method in the data analysis has been found to overestimate *K* values of the formation (Hyder & Butler, 1995). This is due to water flowing into the unsaturated (vadose) zone in addition to the saturated (phreatic) zone.

When the static water level was below the top of the screened interval, a *rising head* test was performed by using a small (< 2” dia.) submersible pump to withdraw water to produce a nearly instantaneous decrease in

* In-Situ® miniTROLL data logger, In-Situ, Inc., 210 S. Third Street, Laramie, WY 82070.

hydraulic head (drawdown). The type of pump used to withdraw water was selected based on the rate of recharge: a low-yield portable pump was used when the recharge rate was relatively low, and a high-yield pump was used for a piezometer with a high recharge rate. When a piezometer yielded a high recharge rate in which significant drawdown would not occur using a pump, a solid slug was used instead. For this method a solid slug was inserted into the piezometer and groundwater was allowed to equilibrate back to static level, after which time the slug was rapidly removed causing water level displacement.

4.4.2 Slug Test Results

Hydraulic conductivity values for the unconfined aquifer in the study area, as determined from the field slug testing, were found to range from a minimum of 1.82×10^{-5} cm/sec (P3-18S) to a maximum of 6.55×10^{-3} cm/sec (P3-15S). Because these values range over several orders of magnitude a *geometric mean* rather than an *arithmetic mean* was calculated as being a more representative measure (Fetter, 1993). One method for calculating the geometric mean is to calculate the antilog of the arithmetic mean of the log-transformed *K* values. The geometric standard deviation is calculated as the antilog of the arithmetic standard deviation of the log-transformed *K* values. The range in K values within one standard deviation of the mean is calculated by multiplying the geometric mean by both the geometric standard deviation and its reciprocal.

The geometric mean of all twenty-three *K* values is therefore 3.87×10^{-4} cm/sec with a geometric standard deviation of 3.48. Multiplying the geometric mean by the standard deviation and its reciprocal gives a *K* range of 1.11×10^{-4} to 1.35×10^{-3} cm/s. Examination of the Table C-1 and Graph C-1 indicate that the majority of the calculated *K* values fall within this range.

The wells tested can be divided into two groups based upon the depth of the screened interval and the material type I which the well is screened. Eighteen of the wells (P3-1, P3-2S, P3-3, P3-4, P3-5, P3-6S, P3-7, P3-8, P3-9, P3-10S, P3-11S, P3-12, P3-13, P3-14, P3-15S, P3-16, P3-17, P3-18S) are screened in the silty sands of the upper part of the unconfined aquifer. The remaining five wells (P3-2D, P3-6D, P3-10D, P3-11D, and P3-15D) are screened in silty to clayey sands near the base of the unconfined aquifer, above the confining layer. The geometric mean of *K* values for wells screened in the upper part of the unconfined aquifer is 4.54×10^{-4} cm/sec with a standard deviation of 3.98 (1.14×10^{-4} to 1.81×10^{-3} cm/s). The geometric mean of *K* values for the wells screened above the confining layer is 2.16×10^{-4} cm/sec with a standard deviation of 1.88 (1.15×10^{-4} to 4.06×10^{-4} cm/s). The calculated *K* values are in agreement with those published for similar materials (Freeze & Cherry, 1979; Fetter, 1993).

Published Hydraulic Conductivity (K) Values (cm/s)		
Material	Range	Source
Silty Clay/Clayey Silt	$10^{-9} – 10^{-6}$	Fetter (1993)
Silty Sand/Sandy Silt	$10^{-3} – 10^{-5}$	Fetter (1993)
Silty Sand (SM)	$10^{-1} – 10^{-5}$	Freeze & Cherry (1979)
Fractured Igneous and Metamorphic Rock	$10^{-2} – 10^{-6}$	Freeze & Cherry (1979)

Results of the field slug tests and the subsequent calculations of the *K* values are summarized in Table C-1. Figure C-1 displays a graphical comparison of the calculated *K* values. Hydraulic properties of soils are summarized in Table 4.

5.0 HYDROLOGY

5.1 Potable Sources

Fifteen (15) private wells were identified within 2,000 feet of the property. Additionally, six (6) public water supply wells were also identified within two miles of the study area. All public supply wells are upgradient and outside of the recharge/discharge areas. Eleven of twenty-three subdivisions within the proposed two-mile radius have wells located either upgradient or outside the recharge and discharge zone for the facility. The Hack-Lewis subdivision, located 2,000 feet northeast of the landfill, may peripherally encroach on the recharge area. There are no known supply receptors within two miles of the landfill or from Edwards Branch, Thoroughfare Swamp, or Falling Creek prior to their confluence with the Neuse River.

The existing Wayne County Landfill has an inactive (out of service) 30-inch diameter water supply well that was formerly used for cleaning purposes. It has been replaced with a 2-inch diameter, 80 foot deep well that is used for cleaning vehicles and filling water trucks. The lower forty feet of this well are in sand, with a five-foot screened interval. The well is currently pumped at a rate of three to four gallons per minute (gpm), and can achieve pumping rates of up to ten gpm. This well is located 1,000 feet south of the unnamed creek, and due to its distance away from the landfill, it is unlikely the continued use of this well will affect the groundwater flow in the proposed Phase 3 area.

5.2 Local Groundwater Regime

Groundwater in the upper part of the unconfined aquifer generally flows in a westward direction towards Edwards Branch, over relatively shallow horizontal hydraulic gradients of approximately 0.0064 to 0.025 feet/foot. Shallower gradients are associated with the eastern part of Phase 3, while steeper gradients occur towards Edwards Branch. A potentiometric map depicting groundwater flow on the October 27, 2006 monitoring date is shown on Plate 3.

The Black Creek Formation is a source for many domestic and municipal wells, providing yields of 50-500 gpm. The chemical quality is not uniform; the lower formation is slightly alkaline and has low iron content while near the outcrop areas the pH is low with high iron content. Sand and surficial deposits furnish more water than any other layer; a highly permeable surface yields 10-50 gpm. Additionally, the chemical quality is uniform with soft water, corrosive to metals and contains excessive levels of iron (Pusey, 1960).

5.3 Groundwater Flow Components

The average linear velocity was determined at each piezometer location to quantify the rate of groundwater flow and its distribution in the study area. A single day potentiometric map with flow directions for the uppermost aquifer is shown as Plate 3. The flow directions were used to calculate the average linear velocity (also known as *seepage velocity*) defined as:

$$v_x = \frac{Q}{n_e} = \frac{K}{n_e}\frac{dh}{dl} \tag{13}$$

where

v_x is the average linear velocity (seepage velocity)

Q is the specific discharge

K is the hydraulic conductivity

n_e is the effective porosity

$\frac{dh}{dl}$ is the hydraulic gradient

The horizontal hydraulic gradient for a given piezometer location was calculated graphically by first drawing a line perpendicular from each piezometer location to the nearest groundwater equipotential contour. The differences in hydraulic head (*dh*) were calculated by subtracting the equipotential elevation from the groundwater elevation in the corresponding piezometer. The lateral distance (*dl*) is the horizontal length of the line segment from the given well to the associated nearest contour. Calculation of the hydraulic gradient at a given piezometer location was determined by dividing *dh* by *dl*. Table 2 summarizes the calculated flow rates in units of feet per year and the parameters used in the calculations. Average linear flow velocities ranged from a low of 0.012 ft/yr (P-5) to a high of 467 ft/yr (P3-15S), with a geometric mean of 26 ft/yr and a geometric standard deviation of 7.44 (3.5 to 193 ft/yr).

5.3.1 Vertical Flow

Vertical hydraulic gradients between piezometers in shallow/deep pairs were calculated using the *EPA Vertical Gradients with Well Screen Effects Calculator* (see References). In general groundwater elevations in the deep piezometers were lower than those in the adjacent shallow piezometers, indicating a general

downward vertical gradient trend across the site. Consistent downward vertical gradients (-0.02 to -0.05 ft/foot avg.) have been observed in well pairs P3-2S/D, P3-6S/D, P3-10S/D, and P3-11S/D, which is consistent with the upgradient location of those wells (recharge area). Consistent upward vertical gradients (0.18 ft/foot avg.) have been observed in well pair P3-18S/D, which is consistent with their downgradient location adjacent to a discharge area (Edwards Branch). Well pair P3-15S/D, which is located hydraulically midway between Edwards Branch and the proposed Phase 3 area, exhibited vertical gradients that shifted from upward to downward during the October 2006 to October 2007 period (-0.005 to 0.01 ft/foot). Calculated vertical flow components are shown in Table 3.

5.4 Leachate Impoundment

Leachate generated in the Phase 3 area will be managed by the existing leachate collection system that currently handles the leachate generated from the adjacent Phase 1 and 2 units. The existing leachate collection system consists of three force mains that pump up the leachate from the Phase 1 area and over to the lagoon located southwest of the Phase 1 area. Additional pipes are laid around the Phase 2 area to collect the leachate from its sump areas and transfer it to the aforementioned lagoon area for treatment. A similar pipe system will be established around the Phase 3 area. Once collected in the lagoon, the leachate will be either circulated into the landfill or pumped directly into the Goldsboro waste water treatment plant.

The water table in the area of the leachate lagoon generally stays about 130 feet above mean sea level (MSL) and dips westward. The water table has exhibited only minor fluctuations over the course of the last six years. Annual fluctuation is usually within one foot, with no abrupt changes in the elevation observed over the measurement period. The lagoon regularly maintains no less than 10 feet of overhead separation between its base and the water table, ensuring the compliance of the regulatory 4-foot vertical separation between its base and the water table, as specified in Rule 15A NCAC 13B.1624 (b)(4).

5.5 Local Precipitation

5.5.1 Introduction

North Carolina ranks sixth in the nation in average annual precipitation (50 inches) and has a mild, humid climate. About 72% of the precipitation is returned to the atmosphere by evapotranspiration, and about 20% recharges the groundwater systems. In 1986, the state experienced the fifth driest year on record, and precipitation was less than normal in most areas.

Daily precipitation data at climate stations located near Dudley were obtained from the North Carolina State Climate Office (NCSCO) for the purpose of characterizing the regional climate in the vicinity of the proposed

landfill site. The Wilson station (Wilson COOP 319476) is identified at latitude N35°41' and longitude W77°56' and is located approximately 21 miles north of the facility. The station provided daily precipitation records from 1960 until our most recent retrieval.

5.5.2 Climatic Trends

Table D-1 provides monthly totals calculated using the original daily totals. Monthly totals are accompanied by daily highs and lows, average daily totals, the standard deviation and standard error associated with it for that given month. The monthly totals are also shown in Graph D-1.

Multiplying the daily average by 30 derived the adjusted monthly total; used for month-to-month comparisons instead of the "real" monthly totals due to the variable number of days per month creating a slight bias in the resulting data. For instance, a month with 31 days would have a slightly higher monthly total than a month with 30 days even if the average daily totals of these compared months were identical. Additionally, these minor adjustments also resolve the occasional incidence of missing data, provided the effect of missing data is insignificant on the overall scale of rainfall activity for the month.

The highest total monthly precipitation was 24.62 inches in September 1999. The station also recorded a month of no rainfall in October 2000, which is attributed to the long-term drought that plagued the region between late 1998 and early 2003. On average, July receives the highest amount of rainfall, followed closely by August and September.

Table D-2 displays annual totals derived from the daily totals in a manner similar to the derivation of the monthly totals; for a given year the daily average total was calculated then multiplied by 365 to derive an "unbiased" annual total for the year. Graph D-2 graphically presents the corresponding annual totals.

Two major droughts took place in this region over the past two decades both of which are observed on Figure D-1. The first drought occurred in 1986 through early part of 1989, appearing as a sudden drop in the annual total from 1985 to 1986. The second drought occurred more recently from 1998 through 2003. The rebound of the 1998-2003 drought occurred in 2003 producing the second highest recorded reading for the year.

5.6 Water Table Fluctuation

5.6.1 On-Site Piezometers

Water level data from the study area piezometers and groundwater monitoring wells were collected on a semi-monthly basis over the course of October 2006 through October 2007. A groundwater elevation summary is provided in Table 1 as elevations above mean sea level (MSL). Table 1 also contains:

1. ground and datum elevations
2. northing and easting piezometer locations
3. observed high for study period and observed high for total readings
4. date seasonal high observed
5. seasonal high correction factor and seasonal high
6. observed low and seasonal fluctuation
7. long term seasonal high correction factor and estimated long term seasonal high

5.7 Seasonal High Groundwater Estimation

5.7.1 Seasonal High Groundwater

Groundwater levels used to evaluate seasonal high groundwater levels for this design study were collected on roughly a monthly basis from October 2006 until October of 2007.

During the period from 1960-2007 the Wilson station received an average annual rainfall of 47.17 ± 8.49 inches. The minimum average rainfall observed during this period was 30.58 inches in 1981, while a maximum of 73.46 inches was observed in 1989. At the Wilson climate station 1999 was shown to be an average season (in terms of 30 day rainfall) from January to March, with 11.25 inches of rain being recorded. The average January to March 30 day total since 1960 is 11.41 inches. 2006 was also an average season for rainfall receiving 52.87 inches. 2007 was a below average season for rainfall; however, groundwater levels were recorded at seasonal high levels. Fall of 2006 experienced several 30 day periods of abnormally large rainfall, which carried over into the winter months of the 2007 season. The observed highs for 2007 were used as the seasonal high. Seasonal highs were used to generate the seasonal high water table map presented as Plate 4A.

5.7.2 Estimation of Long Term Seasonal High

The seasonal high water table elevations were used to generate the long-term seasonal high water table map displayed on Plate 4B. Long-term seasonal high water levels were estimated based on readings collected from Phase 3 piezometers, monitoring wells, precipitation data, topographical location, and on local characterization of the facility. The method incorporates a sufficient "margin of error" to account for varying levels of uncertainty.

The majority of the seasonal highs occurred in January and February 2007 with the temperatures reaching highs of 54-58°F. It is not until March and April that the daily temperature averages are above 50°F consistently. Normally, the seasonal high coincides with the growing season of grasses. The growing season is typically considered "when the normal mean daily temperature rises above 50° to 55° F" (Treece, et al; 1990). In Wayne County, a traditional season typically experiences highs from July to September; however,

fall of 2006 experienced greater than average rainfall which carried over to the beginning of the 2007 season providing the seasonal highs in January and February. Additionally, beginning in May, North Carolina began experiencing drought conditions that continued throughout the year, influencing spring and summer groundwater levels.

The above average season of 1998 experienced highs that were compared with the study period highs, for monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-9 and MW-10. The 2007 highs averaged 1.3 feet below the 1998 season. As a conservative estimate a correction factor of 1.5 feet was applied to seasonal high values to represent long-term seasonal high elevations.

Long-term seasonal high shows similar flow trends to single day groundwater flow (Plate 3). Long-term seasonal high groundwater was used for engineering purposes to develop final subgrade depths and to ensure compliance with 4-foot separation in accordance with Rule 15A NCAC 13B.1624 (b)(4), and was included in the Permit to Construct. Long-term seasonal high elevations were chosen over seasonal high elevations in order to adhere to a more stringent safety factor. Various cross sections depicting this separation and the subsurface conditions are included as Plate 6A and 6B.

5.8 Subgrade

Calculated long-term seasonal high was used to determine elevation of the subgrade to comply with 15A NCAC 13B.1624(b)(4). Subgrade elevation was controlled by features such as the Black Creek Confining Layer, existing Phase 2 liner unit, and the long-term seasonal high. The subgrade has been engineered to be above the confining layer and the long-term seasonal high. Table 5 summarizes the vertical separation of subgrade above long-term seasonal high and top of the confining layer for piezometers located within the Phase 3 disposal area. Additional vertical separation can be seen on cross sections provided as Plate 6A and Plate 6B.

6.0 GROUNDWATER QUALITY MONITORING SYSTEM

6.1 Introduction

The intention of the groundwater quality monitoring system is to create a plan to effectively detect an early release of hazardous constituents to the uppermost aquifer. The *Ground and Surface Water Sampling and Analysis Plan* is included as Appendix E. This section is a summary of that proposed plan.

Groundwater in the proposed Phase 3 area generally flows westwards towards Edwards Branch. A small tributary runs along the southern property line; however, little interaction is expected from this stream. New monitoring points for this plan are summarized on Table E1 and their locations are shown on Plate A.

6.2 Review/Compliance Boundaries

The proposed compliance boundary is 250 feet from the waste limit with a 150 feet review boundary surrounding the majority of Phase 3, designed based on hydrologic and geologic features. On the southernmost border adjacent to the tributary of Edwards Branch, the relative point of compliance is also 50 feet away from the stream. Relative point of compliance is shown on Plate 2.

6.3 Groundwater Monitoring Wells

Three (3) of the currently existing compliance wells, P3-16, P3-18S, and P3-1, will be converted from piezometers into permanent monitoring wells and re-numbered as MW-14, MW-15, and MW-16, respectively. The compliance wells from the Phase 1 and 2 areas will continue to be utilized.

MW-14 (currently piezometer P3-16) is located 120 feet west of the waste limit and will be used as a review well to monitor downgradient groundwater flow and potential contamination from Phase 3. MW-15 (currently piezometer P3-18S) is located approximately 120 feet west of the waste limit, and will be used as a downgradient review well to monitor groundwater flow and potential contamination from the northern part of Phase 3. MW-16 (currently piezometer P3-1) is located approximately 115 feet southeast of the waste limit and will be used as a background/review well.

The aforementioned monitoring wells should efficiently monitor the groundwater traveling throughout the Phase 3 unit, ensuring early detection of any potential release. All proposed monitoring is conducted in accordance with North Carolina Well Construction Standards (15A NCAC 2C). Plate B illustrates a typical monitoring well schematic.

Wells will be installed in areas that are not prone to flooding. The wells will be tagged, labeled, locked with vented caps, and have their locations surveyed. Testing will be done in accordance with and using the methods set forth in North Carolina regulations for Subtitle D landfills. All wells will be tested semi-annually for the Appendix I chemical constituents. Proposed monitoring well specifications are provided in Table E1.

6.4 Monitoring Well Abandonment

No monitoring wells are scheduled for abandonment as part of the proposed Phase 3 expansion. All existing monitoring wells will continue to be sampled according to the schedule outlined in the *Ground and Surface Water Sampling and Analysis Plan* (Appendix E).

6.5 Leachate Monitoring

Since the existing leachate lagoon will be engaged by the proposed Phase 3 unit, monitoring wells MW-4, MW-5 and MW-10 will continue to be used as sampling and monitoring points. Leachate from the existing

Phase 1 and 2 areas is currently sampled from the inflow pipe at the lagoon. The Phase 3 leachate will be sampled from the inflow pipe along with the Phase 1 and 2 leachate. All collected leachate samples shall be tested for biochemical oxygen demand (BOD), chemical oxygen demand (COD), phosphorus, sulfate, nitrate, nitrite, and pH, in addition to the Appendix I constituents.

6.6 Surface Water Monitoring

Surface water monitoring is conducted to detect potential discharge of leachate from the MSWLF into the adjacent wetland areas. The previously established monitoring points SW-2, SW-3, SW-4 and SW-5 will continue to be sampled since Edwards Branch and its tributaries are nearest known surface water bodies that receive groundwater migrating from the landfill area. SW-2 is located in the wetland area south of Phase 1. SW-3 is located on the southern tributary south of the Phase 1 unit, before the confluence with Edwards Branch. SW-4 is located on Edwards Branch east of the Phase 1 unit after the confluence of the southern tributary. MW-5 is located north and slightly west of Phase 3 as an upstream monitoring point. The surface water sampling is conducted semi-annually and tested for the Appendix I chemical constituents. Surface water sampling locations are provided on Plate A.

6.7 Summary

Monitoring wells, surface water locations, and the leachate from the lagoon will be sampled semi-annually in order to determine contaminant types and concentrations. Monitoring wells and surface water will be sampled prior to acceptance of waste to provide background information on water quality. Monitoring wells and surface water locations will be sampled at least once prior to both acceptance of waste and the issuing of the Permit to Operate in order to provide background information on water quality. Three (3) additional baseline sampling events will be conducted, in equally divided events, within six months of the date the Permit to Operate is issued.

In summary, the following actions are proposed to provide groundwater, surface water, and leachate monitoring for the Phase 3 unit of the Wayne County Subtitle D Landfill.

1. Convert piezometers P3-16, P3-18S, and P3-1 into permanent review wells MW-14, MW-15, MW-16;
2. Continue use of Phase 1 & 2 monitoring wells as sampling & monitoring points;
3. Continue use of existing monitoring points MW-4, MW-5, and MW-10 to monitor leachate lagoon;
4. Continue use of existing surface water monitoring points SW-2, SW-3, SW-4, and SW-5.
5. Use existing wells MW-2, MW-8, MW-9 and MW-12 to monitor the sump area.

7.0 CONCLUSIONS

This report completes the requirements for the geological and hydrological features for the Site Hydrogeologic Report as described in Rule 15A NCAC 13B.1623 (a). Geological and hydrological data, information, and conclusions contained herein indicate no hindrance to the development of a landfill at the described location.

This report has been prepared to aid in the design of the proposed lined landfill. It includes our findings relative to soil, rock, and groundwater conditions at the site and its scope is limited to the specific project and location described herein. The information from the field investigation, borings, and laboratory testing depicts site conditions only at the specific locations and times designated. Soil, rock, and groundwater conditions between borings may differ from those occurring at the boring locations. The passage of time may also result in changes in conditions at the boring locations.

All temporary piezometers installed during subsurface exploration and not converted to permanent or semi-permanent monitoring wells or piezometers will be abandoned in accordance with the procedures for permanent abandonment of wells as described in Rule 15A NCAC 2C.0113 (a)(2). All of the existing piezometers installed as part of this study will be retained for future water level measurement, and will be abandoned as necessitated by future landfill development at the site.

Respectfully submitted,
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Table 1: Groundwater Elevation Summary

	Well	Date Installed	Datum	Ground	Northing	Easting	Completion Depth (feet)	Top of Confining Layer
New Piezometers	P3-1	09/14/2006	161.20	157.82	564069.0902	2278212.9180	137.54	-
	P3-2S	09/14/2006	168.58	165.45	564348.4773	2278378.5640	138.45	-
	P3-2D	09/29/2006	167.94	165.43	564347.6165	2278377.4990	111.63	112.43
	P3-3	09/17/2006	156.87	154.06	564290.3934	2278101.5800	139.07	-
	P3-4	09/15/2006	155.85	152.88	564627.6602	2278127.3810	138.05	111.88
	P3-5	10/01/2006	154.31	151.51	564922.9921	2277922.4730	135.81	-
	P3-6S	09/18/2006	152.31	149.16	564833.0157	2277716.0200	129.57	-
	P3-6D	09/27/2006	152.18	149.24	564832.4977	2277719.2670	112.20	112.24
	P3-7	09/19/2006	156.86	153.80	565083.8333	2278008.5670	136.97	-
	P3-8	09/18/2006	149.72	146.54	564886.3511	2277469.2800	131.00	-
	P3-9	09/18/2006	150.09	147.01	565123.9844	2277707.9680	131.34	-
	P3-10S	09/11/2006	154.48	151.23	565232.9134	2277904.1670	135.11	-
	P3-10D	09/27/2006	154.07	150.96	565234.7193	2277902.3160	111.77	111.96
	P3-11S	09/25/2006	149.73	146.53	565327.2956	2277607.8310	129.50	-
	P3-11D	09/11/2006	149.59	146.58	565323.4230	2277608.4680	108.16	111.58
	P3-12	09/27/2006	146.59	143.46	565296.1268	2277343.6140	125.28	-
	P3-13	09/26/2006	143.04	139.88	565262.2218	2277060.2900	125.43	111.38
	P3-14	09/19/2006	154.17	151.16	565490.4059	2277222.7990	129.60	-
	P3-15S	09/21/2006	152.23	149.14	565601.0296	2277466.9030	132.61	-
	P3-15D	09/22/2006	152.24	148.98	565605.1036	2277466.7820	114.49	-
	P3-16	09/21/2006	137.51	134.68	565333.9044	2276628.5890	113.44	-
	P3-17	09/25/2006	143.32	140.37	565669.1179	2277108.0940	119.32	-
	P3-18S	09/26/2006	131.74	129.01	565608.3496	2276656.4740	112.84	-
	P3-18D	09/28/2006	136.79	128.89	565606.9570	2276659.5220	91.91	110.89
	P3-19	09/30/2006	144.13	141.13	565612.8572	2276858.3176	123.39	-
Previously Installed	P-1	01/10/1996	171.06	169.83	564578.1440	2278904.0450	147.83	-
	P-2	12/27/1995	168.72	167.05	564909.7010	2278379.2110	139.05	-
	P-5	01/11/1996	157.58	156.25	565478.3380	2277819.6530	137.25	-
	MW-1	12/05/1997	164.51	161.95	564692.9280	2278486.5660	139.45	-
	MW-2	12/05/1997	147.27	144.63	563446.5650	2277511.3280	124.63	-
	MW-3	12/04/1997	138.50	136.40	563226.7860	2276735.1680	116.40	-
	MW-4	12/03/1997	139.80	137.80	563003.9490	2275825.2130	112.80	-
	MW-5	12/03/1997	140.15	137.35	563268.7800	2275796.3230	114.35	-
	MW-6	12/03/1997	146.58	144.42	563420.0600	2276273.5620	119.42	-
	MW-7	12/04/1997	135.89	133.57	563988.3740	2276286.5660	113.57	-
	MW-8	12/18/1997	135.25	132.79	564406.3200	2276485.1160	112.79	-
	MW-9	12/04/1997	141.31	139.13	563181.2000	2276331.0610	116.13	-
	MW-10	12/04/1997	141.43	139.19	563108.1400	2276099.9690	116.19	-
	MW-11	04/15/2004	134.76	131.76	564691.5693	2276609.6578	116.27	-
	MW-12	04/15/2004	135.19	132.19	565094.1149	2276681.3701	115.74	-
	MW-13	04/15/2004	149.89	146.89	563679.0995	2277878.7593	131.04	-

Table 1: Groundwater Elevation Summary

	Well	Time of Boring	24 Hours After	7 Days After	12/30/1997	02/25/1998	04/27/1998	06/08/1998	02/23/1999
New Piezometers	P3-1	147.82	145.58	145.89	-	-	-	-	-
	P3-2S	148.45	149.39	149.21	-	-	-	-	-
	P3-2D	148.43	148.26	148.27	-	-	-	-	-
	P3-3	147.56	146.69	146.64	-	-	-	-	-
	P3-4	148.88	148.47	148.34	-	-	-	-	-
	P3-5	147.51	147.50	147.35	-	-	-	-	-
	P3-6S	145.66	146.00	145.90	-	-	-	-	-
	P3-6D	145.74	145.05	145.03	-	-	-	-	-
	P3-7	148.80	148.50	148.36	-	-	-	-	-
	P3-8	144.54	144.33	144.20	-	-	-	-	-
	P3-9	146.01	145.71	145.58	-	-	-	-	-
	P3-10S	147.23	147.11	147.04	-	-	-	-	-
	P3-10D	146.96	146.06	146.04	-	-	-	-	-
	P3-11S	144.53	144.40	144.23	-	-	-	-	-
	P3-11D	144.58	143.58	143.45	-	-	-	-	-
	P3-12	142.46	142.06	141.98	-	-	-	-	-
	P3-13	138.88	138.19	138.06	-	-	-	-	-
	P3-14	139.66	139.72	139.48	-	-	-	-	-
	P3-15S	142.14	142.22	142.12	-	-	-	-	-
	P3-15D	141.98	142.38	142.12	-	-	-	-	-
	P3-16	126.18	128.90	129.72	-	-	-	-	-
	P3-17	130.37	134.94	135.72	-	-	-	-	-
	P3-18S	128.51	128.84	128.93	-	-	-	-	-
	P3-18D	129.39	-	130.01	-	-	-	-	-
	P3-19	134.13	134.12	134.09	-	-	-	-	-
Previously Installed	P-1	-	-	-	-	-	-	-	-
	P-2	-	-	-	-	-	-	-	-
	P-5	-	-	-	-	-	-	-	-
	MW-1	151.95	139.45	-	152.39	159.05	157.52	154.16	154.09
	MW-2	136.63	124.63	-	138.55	139.24	138.80	138.46	138.13
	MW-3	131.40	116.40	-	134.53	134.68	134.15	133.66	133.47
	MW-4	124.30	112.80	-	123.97	126.30	125.43	124.42	124.05
	MW-5	126.35	114.35	-	123.92	125.77	125.04	124.20	123.76
	MW-6	130.92	119.42	-	131.28	131.83	131.43	131.05	130.41
	MW-7	124.57	113.57	-	129.10	129.65	129.88	129.79	129.77
	MW-8	124.79	112.79	-	126.30	126.37	125.80	125.96	126.98
	MW-9	130.13	116.13	-	131.02	131.34	131.10	130.66	130.03
	MW-10	126.19	116.18	-	129.27	130.01	129.81	129.42	128.82
	MW-11	-	-	-	-	-	-	-	-
	MW-12	-	-	-	-	-	-	-	-
	MW-13	-	-	-	-	-	-	-	-

Table 1: Groundwater Elevation Summary

	Well	08/24/1999	02/10/2000	08/03/2000	02/08/2001	08/08/2001	02/14/2002	08/22/2002	02/06/2003
New Piezometers	P3-1	-	-	-	-	-	-	-	-
	P3-2S	-	-	-	-	-	-	-	-
	P3-2D	-	-	-	-	-	-	-	-
	P3-3	-	-	-	-	-	-	-	-
	P3-4	-	-	-	-	-	-	-	-
	P3-5	-	-	-	-	-	-	-	-
	P3-6S	-	-	-	-	-	-	-	-
	P3-6D	-	-	-	-	-	-	-	-
	P3-7	-	-	-	-	-	-	-	-
	P3-8	-	-	-	-	-	-	-	-
	P3-9	-	-	-	-	-	-	-	-
	P3-10S	-	-	-	-	-	-	-	-
	P3-10D	-	-	-	-	-	-	-	-
	P3-11S	-	-	-	-	-	-	-	-
	P3-11D	-	-	-	-	-	-	-	-
	P3-12	-	-	-	-	-	-	-	-
	P3-13	-	-	-	-	-	-	-	-
	P3-14	-	-	-	-	-	-	-	-
	P3-15S	-	-	-	-	-	-	-	-
	P3-15D	-	-	-	-	-	-	-	-
	P3-16	-	-	-	-	-	-	-	-
	P3-17	-	-	-	-	-	-	-	-
	P3-18S	-	-	-	-	-	-	-	-
	P3-18D	-	-	-	-	-	-	-	-
	P3-19	-	-	-	-	-	-	-	-
Previously Installed	P-1	-	-	-	-	-	-	-	-
	P-2	-	-	-	-	-	-	-	-
	P-5	-	-	-	-	-	-	-	-
	MW-1	150.36	156.34	150.89	150.37	151.37	151.48	148.86	148.60
	MW-2	137.17	138.41	137.25	137.34	137.27	137.92	136.45	137.07
	MW-3	132.89	133.87	132.92	132.96	132.88	133.40	132.32	132.86
	MW-4	122.88	124.48	122.90	123.05	123.04	123.53	122.20	123.00
	MW-5	123.19	124.07	123.30	123.31	123.43	123.55	122.75	123.35
	MW-6	129.72	130.62	129.88	129.71	129.97	130.10	129.44	129.78
	MW-7	129.26	129.69	129.39	129.19	129.44	129.51	129.02	129.27
	MW-8	126.78	127.55	126.93	126.96	126.90	127.39	126.16	126.80
	MW-9	129.40	130.40	129.59	129.49	129.62	129.99	129.16	129.50
	MW-10	128.26	129.24	124.43	128.23	128.48	128.75	127.99	128.33
	MW-11	-	-	-	-	-	-	-	-
	MW-12	-	-	-	-	-	-	-	-
	MW-13	-	-	-	-	-	-	-	-

Table 1: Groundwater Elevation Summary

	Well	08/13/2003	10/10/2003	10/15/2003	02/18/2004	08/26/2004	11/30/2004	02/22/2005	08/09/2005
New Piezometers	P3-1	-	-	-	-	-	-	-	-
	P3-2S	-	-	-	-	-	-	-	-
	P3-2D	-	-	-	-	-	-	-	-
	P3-3	-	-	-	-	-	-	-	-
	P3-4	-	-	-	-	-	-	-	-
	P3-5	-	-	-	-	-	-	-	-
	P3-6S	-	-	-	-	-	-	-	-
	P3-6D	-	-	-	-	-	-	-	-
	P3-7	-	-	-	-	-	-	-	-
	P3-8	-	-	-	-	-	-	-	-
	P3-9	-	-	-	-	-	-	-	-
	P3-10S	-	-	-	-	-	-	-	-
	P3-10D	-	-	-	-	-	-	-	-
	P3-11S	-	-	-	-	-	-	-	-
	P3-11D	-	-	-	-	-	-	-	-
	P3-12	-	-	-	-	-	-	-	-
	P3-13	-	-	-	-	-	-	-	-
	P3-14	-	-	-	-	-	-	-	-
	P3-15S	-	-	-	-	-	-	-	-
	P3-15D	-	-	-	-	-	-	-	-
	P3-16	-	-	-	-	-	-	-	-
	P3-17	-	-	-	-	-	-	-	-
	P3-18S	-	-	-	-	-	-	-	-
	P3-18D	-	-	-	-	-	-	-	-
	P3-19	-	-	-	-	-	-	-	-
Previously Installed	P-1	-	-	-	-	-	-	-	-
	P-2	-	-	-	-	-	-	-	-
	P-5	-	-	-	-	-	-	-	-
	MW-1	151.75	150.24	150.33	151.64	152.81	-	150.60	149.99
	MW-2	137.76	137.33	137.37	137.99	137.94	-	137.77	137.23
	MW-3	133.45	133.08	133.08	133.86	133.50	-	133.40	132.88
	MW-4	123.69	123.23	123.26	123.96	124.53	-	123.68	123.31
	MW-5	123.73	123.50	123.50	123.93	123.95	-	123.80	123.72
	MW-6	130.56	129.99	130.03	130.55	130.57	-	131.28	129.93
	MW-7	129.78	129.43	129.51	129.83	130.05	-	129.96	129.88
	MW-8	127.40	126.90	126.94	127.58	127.60	-	127.51	127.23
	MW-9	130.34	129.70	129.73	130.50	130.33	-	130.00	129.58
	MW-10	129.12	128.53	128.60	129.18	129.09	-	128.66	128.42
	MW-11	-	-	-	-	130.45	130.46	130.26	130.16
	MW-12	-	-	-	-	131.56	131.13	130.48	129.98
	MW-13	-	-	-	-	143.24	141.98	141.79	141.24

Table 1: Groundwater Elevation Summary

	Well	02/22/2006	08/29/2006	10/27/2006	12/08/2006	12/12/2006	01/03/2007	02/05/2007	02/07/2007
New Piezometers	P3-1	-	-	145.92	146.94	-	147.17	147.15	-
	P3-2S	-	-	149.02	150.95	-	151.19	150.98	150.75
	P3-2D	-	-	148.13	149.88	149.80	150.12	149.99	149.79
	P3-3	-	-	146.73	148.06	-	148.21	148.16	-
	P3-4	-	-	148.55	150.20	-	150.42	150.34	150.14
	P3-5	-	-	147.67	149.08	-	149.24	149.23	149.08
	P3-6S	-	-	146.33	147.30	-	147.42	147.51	147.24
	P3-6D	-	-	145.38	146.37	-	146.52	146.59	146.37
	P3-7	-	-	148.36	150.04	-	150.24	150.08	-
	P3-8	-	-	144.65	145.20	-	145.35	145.47	145.40
	P3-9	-	-	145.98	146.84	-	146.97	147.03	-
	P3-10S	-	-	147.28	148.53	148.43	148.67	148.60	-
	P3-10D	-	-	146.17	147.31	147.26	147.53	147.56	-
	P3-11S	-	-	144.44	144.96	-	145.10	145.12	-
	P3-11D	-	-	143.69	144.50	-	144.74	144.80	-
	P3-12	-	-	142.30	142.59	-	142.68	142.72	-
	P3-13	-	-	138.60	139.18	-	139.40	139.39	-
	P3-14	-	-	139.59	140.27	140.22	140.42	140.45	140.22
	P3-15S	-	-	142.12	142.72	142.64	142.91	142.96	-
	P3-15D	-	-	142.05	142.94	142.89	143.09	143.09	-
	P3-16	-	-	129.89	130.67	-	130.77	130.77	-
	P3-17	-	-	135.83	136.79	-	136.94	136.92	-
	P3-18S	-	-	129.02	129.45	-	129.63	129.74	-
	P3-18D	-	-	130.08	131.39	-	131.76	131.77	-
	P3-19	-	-	134.16	134.92	-	135.05	135.08	-
Previously Installed	P-1	-	-	150.35	156.44	-	156.60	156.02	-
	P-2	-	-	150.09	152.57	-	152.97	152.52	-
	P-5	-	-	145.25	146.02	-	146.14	146.13	-
	MW-1	150.36	149.21	150.49	152.91	-	153.26	153.05	153.12
	MW-2	137.75	136.93	137.74	138.12	-	138.29	138.39	138.42
	MW-3	133.50	132.58	-	-	-	-	-	134.24
	MW-4	124.02	123.28	-	-	-	-	-	125.59
	MW-5	123.98	123.55	-	-	-	-	-	124.68
	MW-6	130.62	129.77	-	-	-	-	-	131.13
	MW-7	130.14	129.87	-	-	-	-	-	130.46
	MW-8	127.82	126.84	127.70	127.94	-	128.12	128.22	128.32
	MW-9	130.26	129.31	-	-	-	-	-	130.89
	MW-10	129.01	128.22	-	-	-	-	-	129.60
	MW-11	130.72	130.03	130.63	130.63	-	130.66	130.78	130.80
	MW-12	130.61	131.52	130.58	130.99	-	131.16	131.19	131.20
	MW-13	141.77	140.70	141.74	142.37	-	142.57	142.59	142.58

Table 1: Groundwater Elevation Summary

	Well	03/07/2007	04/18/2007	05/24/2007	06/20/2007	07/31/2007	09/06/2007	10/04/07
New Piezometers	P3-1	146.79	146.70	145.86	145.39	144.90	144.35	144.19
	P3-2S	150.34	149.97	149.00	148.45	147.87	147.16	146.93
	P3-2D	152.40	149.07	148.09	147.54	146.92	146.25	146.04
	P3-3	147.77	147.46	146.70	146.29	145.76	145.16	144.96
	P3-4	149.82	149.43	148.24	147.73	147.15	146.44	146.24
	P3-5	148.78	148.45	147.16	146.66	146.19	145.41	145.28
	P3-6S	147.08	146.99	145.51	145.13	144.80	143.96	143.93
	P3-6D	146.13	145.98	144.76	144.37	143.89	143.16	143.15
	P3-7	149.62	149.16	148.06	147.50	146.91	146.20	146.05
	P3-8	145.12	145.04	143.80	143.56	143.18	142.31	142.56
	P3-9	146.58	146.49	145.20	144.75	144.28	143.54	143.74
	P3-10S	148.19	147.91	146.82	146.30	145.77	144.99	145.10
	P3-10D	147.08	146.80	145.78	145.26	144.72	143.95	144.02
	P3-11S	144.84	144.75	143.98	143.53	143.22	142.54	142.82
	P3-11D	144.34	144.24	143.25	142.83	142.38	141.65	141.90
	P3-12	142.45	142.48	141.36	140.89	140.49	139.50	140.21
	P3-13	139.02	139.01	137.23	136.75	136.54	135.38	136.24
	P3-14	140.05	139.98	138.51	137.86	137.61	136.99	137.26
	P3-15S	142.44	142.68	141.63	141.18	140.90	140.33	141.65
	P3-15D	142.59	142.36	141.55	140.96	140.65	139.97	140.20
	P3-16	130.06	130.83	128.93	128.31	128.29	127.33	128.13
	P3-17	136.28	136.64	134.91	134.37	134.14	133.48	134.07
	P3-18S	129.43	129.55	128.32	127.69	127.65	126.84	127.73
	P3-18D	131.68	136.77	134.61	133.89	133.49	132.97	133.15
	P3-19	134.67	134.73	133.39	132.81	132.66	131.87	132.42
Previously Installed	P-1	155.45	154.49	153.59	152.7	151.72	150.95	150.68
	P-2	151.96	151.27	150.16	149.49	148.73	147.99	147.88
	P-5	145.79	145.75	144.87	144.4	143.95	143.2	143.21
	MW-1	152.31	151.87	150.84	149.94	149.10	148.39	148.16
	MW-2	138.09	138.24	137.28	136.95	136.44	135.84	136.03
	MW-3	-	-	-	-	-	-	-
	MW-4	-	-	-	-	-	-	-
	MW-5	-	-	-	-	-	-	-
	MW-6	-	-	-	-	-	-	-
	MW-7	-	-	-	-	-	-	-
	MW-8	128.13	128.17	126.22	127.04	126.68	125.74	127.02
	MW-9	-	-	-	-	-	-	-
	MW-10	-	-	-	-	-	-	-
	MW-11	130.66	130.81	128.84	130.10	129.74	128.85	130.15
	MW-12	131.08	131.22	129.25	130.52	130.15	129.25	129.02
	MW-13	142.29	142.48	141.49	141.01	140.50	139.86	140.38

Table 1: Groundwater Elevation Summary

	Well	Observed High for Study Period	Observed Seasonal High	Date Seasonal High Reading Observed	Observed Seasonal Low	High vs. Low Fluctuation	Correction Factor	Estimated Long-Term Seasonal High
New Piezometers	P3-1	147.17	147.17	01/03/2007	144.19	2.98	1.5	148.67
	P3-2S	151.19	151.19	01/03/2007	146.93	4.26	1.5	152.69
	P3-2D	152.40	152.40	03/07/2007	146.04	6.36	1.5	153.90
	P3-3	148.21	148.21	01/03/2007	144.96	3.25	1.5	149.71
	P3-4	150.42	150.42	01/03/2007	146.24	4.18	1.5	151.92
	P3-5	149.24	149.24	01/03/2007	145.28	3.96	1.5	150.74
	P3-6S	147.51	147.51	02/05/2007	143.93	3.58	1.5	149.01
	P3-6D	146.59	146.59	02/05/2007	143.15	3.44	1.5	148.09
	P3-7	150.24	150.24	01/03/2007	146.05	4.19	1.5	151.74
	P3-8	145.47	145.47	02/05/2007	142.31	3.16	1.5	146.97
	P3-9	147.03	147.03	02/05/2007	143.54	3.49	1.5	148.53
	P3-10S	148.67	148.67	01/03/2007	144.99	3.68	1.5	150.17
	P3-10D	147.56	147.56	02/05/2007	143.95	3.61	1.5	149.06
	P3-11S	145.12	145.12	02/05/2007	142.54	2.58	1.5	146.62
	P3-11D	144.80	144.80	02/05/2007	141.65	3.15	1.5	146.30
	P3-12	142.72	142.72	02/05/2007	139.50	3.22	1.5	144.22
	P3-13	139.40	139.40	01/03/2007	135.38	4.02	1.5	140.90
	P3-14	140.45	140.45	02/05/2007	136.99	3.46	1.5	141.95
	P3-15S	142.96	142.96	02/05/2007	140.33	2.63	1.5	144.46
	P3-15D	143.09	143.09	01/03/2007	139.97	3.12	1.5	144.59
	P3-16	130.83	130.83	04/18/2007	127.33	3.50	1.5	132.33
	P3-17	136.94	136.94	01/03/2007	133.48	3.46	1.5	138.44
	P3-18S	129.74	129.74	02/05/2007	126.84	2.90	1.5	131.24
	P3-18D	136.77	136.77	04/18/2007	130.08	6.69	1.5	138.27
	P3-19	135.08	135.08	02/05/2007	131.87	3.21	1.5	136.58
Previously Installed	P-1	156.60	156.60	01/03/2007	150.35	6.25	1.5	158.10
	P-2	152.97	152.97	01/03/2007	147.88	5.09	1.5	154.47
	P-5	146.14	146.14	01/03/2007	143.20	2.94	1.5	147.64
	MW-1	153.26	159.05	02/25/1998	148.16	10.89	1.5	160.55
	MW-2	138.42	139.24	02/25/1998	135.84	3.40	1.5	140.74
	MW-3	134.24	134.68	02/25/1998	132.32	2.36	1.5	136.18
	MW-4	125.59	126.30	02/25/1998	122.20	4.10	1.5	127.80
	MW-5	124.68	125.77	02/25/1998	122.75	3.02	1.5	127.27
	MW-6	131.13	131.83	02/25/1998	129.44	2.39	1.5	133.33
	MW-7	130.46	130.46	02/07/2007	129.02	1.44	1.5	131.96
	MW-8	128.32	128.32	02/07/2007	125.74	2.58	1.5	129.82
	MW-9	130.89	131.34	02/25/1998	129.16	2.18	1.5	132.84
	MW-10	129.60	130.01	02/25/1998	124.43	5.58	1.5	131.51
	MW-11	130.81	130.81	04/18/2007	128.84	1.97	1.5	132.31
	MW-12	131.22	131.56	08/26/2004	129.02	2.54	1.5	133.06
	MW-13	142.59	143.24	08/26/2004	139.86	3.38	1.5	144.74

Table 2: Flow rate calculations

Piezometer	h_1 (ft)	h_2 (ft)	dh (ft)	dl (ft)	i	K (cm/sec)	n_e (%)	Q (ft/yr)	v (ft/yr)	Screened Interval Lithology
P3-1	145.92	144.00	1.92	237	0.008	1.10E-3	17%	9.2	53	Silty Sand
P3-2S	149.02	148.00	1.02	102	0.010	2.08E-3	17%	21.4	123	Silty Sand
P3-2D	148.13	-	-	-	-	1.88E-4	17%	-	-	Silty Sand
P3-3	146.73	146.00	0.73	67	0.011	1.11E-3	17%	12.5	72	Silty Sand
P3-4	148.55	148.00	0.55	59	0.0093	3.18E-4	17%	3.1	18	Silty Sand
P3-5	147.67	146.00	1.67	232	0.0072	1.57E-3	17%	11.7	67	Silty Sand
P3-6S	146.33	146.00	0.33	7	0.049	5.75E-4	17%	29.0	167	Silty Sand
P3-6D	145.38	-	-	-	-	2.83E-4	8%	-	-	Silty Sand with Clay
P3-7	148.36	148.00	0.36	46	0.0079	7.92E-4	17%	6.5	37	Silty Sand
P3-8	144.65	144.00	0.65	40	0.016	4.61E-4	17%	7.8	45	Silty Sand
P3-9	145.98	144.00	1.98	215	0.0092	1.06E-4	17%	1.0	5.8	Sandy Silt
P3-10S	147.28	146.00	1.28	130	0.010	4.29E-4	17%	4.4	25	Silty Sand
P3-10D	146.17	-	-	-	-	2.87E-4	8%	-	-	Silty Sand with Clay
P3-11S	144.44	144.00	0.44	45	0.010	5.47E-4	17%	5.5	32	Silty Sand
P3-11D	143.69	-	-	-	-	3.99E-4	8%	-	-	Silty Sand with Clay
P3-12	142.30	142.00	0.30	20	0.015	1.63E-4	17%	2.5	14	Silty Sand
P3-13	138.60	138.00	0.60	30	0.020	9.20E-5	8%	1.9	24	Silty Sand with Clay
P3-14	139.59	138.00	1.59	91	0.017	9.67E-4	17%	17.5	100	Silty Sand
P3-15S	142.12	142.00	0.12	10	0.012	6.55E-3	17%	81.3	467	Silty Sand
P3-15D	142.05	-	-	-	-	7.79E-5	8%	-	-	Silty Sand with Clay
P3-16	129.89	130.00	0.11	7	0.016	2.63E-4	17%	4.3	25	Silty Sand
P3-17	135.83	136.00	0.17	7	0.024	2.24E-4	17%	5.4	31	Silty Sand
P3-18S	129.02	130.00	0.98	38	0.026	1.82E-5	17%	0.5	2.8	Silty Sand
P3-19	134.16	136.00	1.84	12	0.15	5.35E-4	31%	81.7	264	Sand
MW-11	130.63	132.00	1.37	89	0.015	1.46E-4	8%	2.3	28	Sandy Clay
MW-12	130.58	132.00	1.42	85	0.017	1.63E-4	17%	2.8	16	Silty Sand
MW-13	141.74	140.00	1.74	190	0.0091	2.14E-3	17%	20.2	116	Silty Sand
P-1	150.35	150.00	0.35	80	0.0044	9.70E-5	8%	0.4	5.3	Sandy Clay
P-2	150.09	150.00	0.09	17	0.0054	7.70E-4	31%	4.3	14	Sand
P-5	145.25	144.00	1.25	146	0.0085	1.10E-7	8%	0.001	0.012	Sandy Clay

NOTES:

1. Parameters *dh* and *dl* denote the difference in the hydraulic head and the horizontal distance, respectively, between two measurement points. A line is constructed from a piezometer to a perpendicular of the potentiometric contour in Plate 3 *Single day potentiometric map with flow directions.* The hydraulic head is the absolute value of the difference in the groundwater elevation at the piezometer, h_1, and the elevation of the corresponding potentiometric contour, h_2. The horizontal distance, *dh,* is the length of the line.

Notes continued on next page.....

Table 2: Flow rate calculations

Continued from previous page.....

2. Parameter *i* denotes the hydraulic gradient associated with the line, and is defined by the equation:

$$i = \frac{dh}{dl}$$

3. Parameter n_e denotes the effective porosity. Soil effective porosities were derived by calculating the average effective porosity for each lithology in Table B-3. Sandy Silt and Silty Sand generally fall in similar effective porosity ranges based on the Johnson trilinear graph and as such the average value of 17% was used. The average effective porosity of Sandy Clay and Silty Sand with Clay was 8%.

4. *K* denotes the hydraulic conductivity determined from field slug tests. A lithological average hydraulic conductivity value was used as a substitute for those piezometers on which slug tests were not performed. Average hydraulic conductivity is shown on Table B-1. Values for piezometers with the prefix P- were obtained from the design study.

5. Parameters *Q* and *v* denote the specific discharge and the average linear velocity, respectively. The specific discharge, Q, is defined by the equation:

$$Q = -K\frac{dh}{dl}$$

The average linear velocity, denoted by *v*, is defined by the equation:

$$v = -\frac{K}{n_e}\frac{dh}{dl} = \frac{Q}{n_e}$$

5. Displayed flow direction is derived from the water level data taken on October 27, 2006.

Table 3: Vertical Flow Compontents

Date	P3-2S	P3-2D	dh	dl (mid-point of saturated screen)	Vertical Gradient (dh/dl)
10/27/2006	149.02	148.13	-0.89	29.61	-0.03
12/08/2006	150.95	149.88	-1.07	30.57	-0.04
12/12/2006	-	149.80	-	-	-
01/03/2007	151.19	150.12	-1.07	30.69	-0.03
02/05/2007	150.98	149.99	-0.99	30.59	-0.03
02/07/2007	150.75	149.79	-0.96	30.47	-0.03
03/07/2007	150.34	152.40	2.06	30.27	0.07
04/18/2007	149.97	149.07	-0.90	30.08	-0.03
05/24/2007	149.00	148.09	-0.91	29.60	-0.03
06/20/2007	148.45	147.54	-0.91	29.32	-0.03
07/31/2007	147.87	146.92	-0.95	29.03	-0.03
09/06/2007	147.16	146.25	-0.91	28.68	-0.03
10/04/2007	146.93	146.04	-0.89	28.56	-0.03
		Average	**-0.70**		**-0.02**

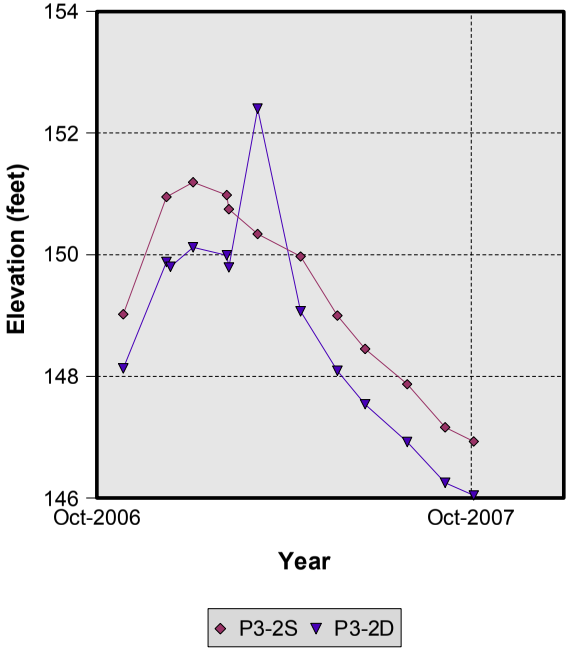


Table 3: Vertical Flow Compontents

Date	P3-6S	P3-6D	dh	dl (mid-point of saturated screen)	Vertical Gradient (dh/dl)
10/27/2006	146.33	145.38	-0.95	19.87	-0.05
12/08/2006	147.30	146.37	-0.93	19.87	-0.05
01/03/2007	147.42	146.52	-0.90	19.87	-0.05
02/05/2007	147.51	146.59	-0.92	19.87	-0.05
02/07/2007	147.24	146.37	-0.87	19.87	-0.04
03/07/2007	147.08	146.13	-0.95	19.87	-0.05
04/18/2007	146.99	145.98	-1.01	19.87	-0.05
05/24/2007	145.51	144.76	-0.75	19.87	-0.04
06/20/2007	145.13	144.37	-0.76	19.87	-0.04
07/31/2007	144.80	143.89	-0.91	19.87	-0.05
09/06/2007	143.96	143.16	-0.80	19.87	-0.04
10/04/2007	143.93	143.15	-0.78	19.87	-0.04
		Average	**-0.88**		**-0.04**

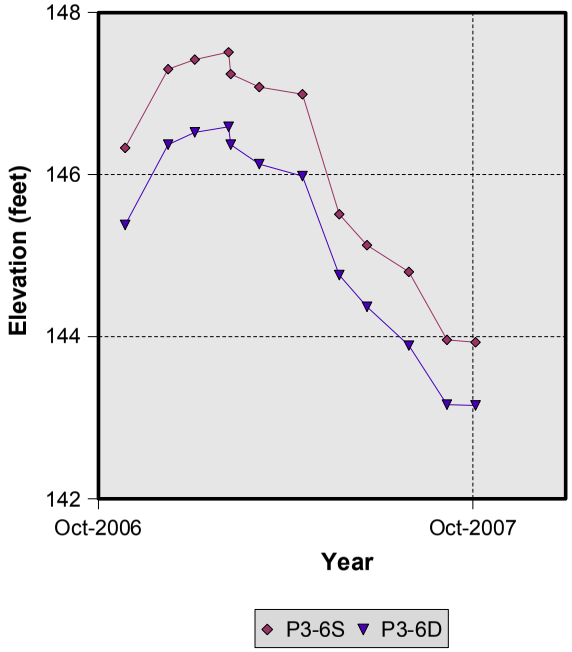


Table 3: Vertical Flow Compontents

Date	P3-10S	P3-10D	dh	dl (mid-point of saturated screen)	Vertical Gradient (dh/dl)
10/27/2006	147.28	146.17	-1.11	23.34	-0.05
12/08/2006	148.53	147.31	-1.22	23.34	-0.05
12/12/2006	148.43	147.26	-1.17	23.34	-0.05
01/03/2007	148.67	147.53	-1.14	23.34	-0.05
02/05/2007	148.60	147.56	-1.04	23.34	-0.04
03/07/2007	148.19	147.08	-1.11	23.34	-0.05
04/18/2007	147.91	146.80	-1.11	23.34	-0.05
05/24/2007	146.82	145.78	-1.04	23.34	-0.04
06/20/2007	146.30	145.26	-1.04	23.34	-0.04
07/31/2007	145.77	144.72	-1.05	23.34	-0.04
09/06/2007	144.99	143.95	-1.04	23.28	-0.04
10/04/2007	145.10	144.02	-1.08	23.34	-0.05
		Average	**-1.10**		**-0.05**

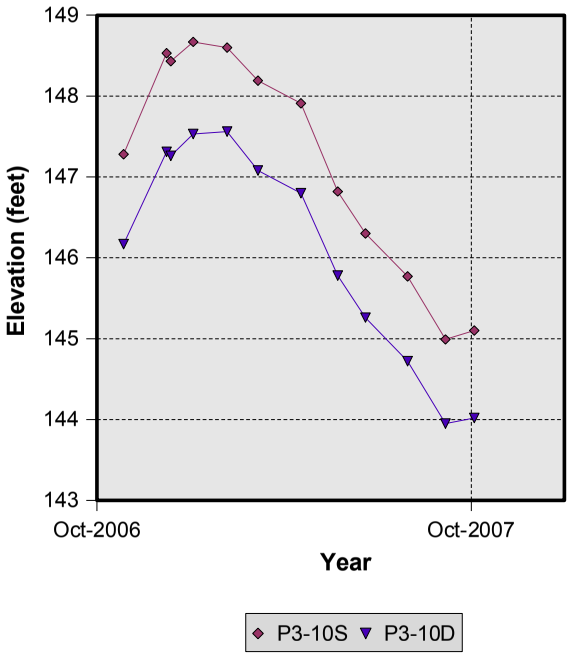


Table 3: Vertical Flow Compontents

Date	P3-11S	P3-11D	dh	dl (mid-point of saturated screen)	Vertical Gradient (dh/dl)
10/27/2006	144.44	143.69	-0.75	23.84	-0.03
12/08/2006	144.96	144.50	-0.46	23.84	-0.02
01/03/2007	145.10	144.74	-0.36	23.84	-0.02
02/05/2007	145.12	144.80	-0.32	23.84	-0.01
03/07/2007	144.84	144.34	-0.50	23.84	-0.02
04/18/2007	144.75	144.24	-0.51	23.84	-0.02
05/24/2007	143.98	143.25	-0.73	23.84	-0.03
06/20/2007	143.53	142.83	-0.70	23.84	-0.03
07/31/2007	143.22	142.38	-0.84	23.84	-0.04
09/06/2007	142.54	141.65	-0.89	23.84	-0.04
10/04/2007	142.82	141.90	-0.92	23.84	-0.04
		Average	**-0.63**		**-0.03**

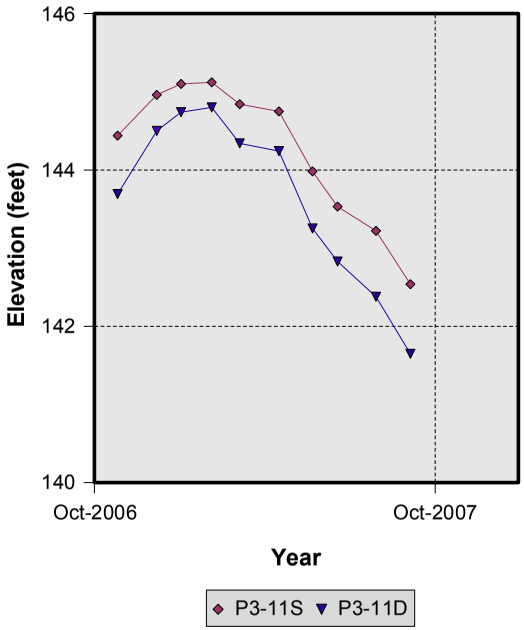


Table 3: Vertical Flow Compontents

Date	P3-15S	P3-15D	dh	dl (mid-point of saturated screen)	Vertical Gradient (dh/dl)
10/27/2006	142.12	142.05	-0.07	17.68	-0.004
12/08/2006	142.72	142.94	0.22	17.92	0.01
12/12/2006	142.64	142.89	0.25	17.92	0.01
01/03/2007	142.91	143.09	0.18	17.92	0.01
02/05/2007	142.96	143.09	0.13	17.92	0.01
03/07/2007	142.44	142.59	0.15	17.84	0.01
04/18/2007	142.68	142.36	-0.32	17.92	-0.02
05/24/2007	141.63	141.55	-0.08	17.43	-0.005
06/20/2007	141.18	140.96	-0.22	17.21	-0.01
07/31/2007	140.90	140.65	-0.25	17.07	-0.01
09/06/2007	140.33	139.97	-0.36	16.78	-0.02
10/04/2007	141.65	140.20	-1.45	17.44	-0.08
		Average	**-0.15**		**-0.009**

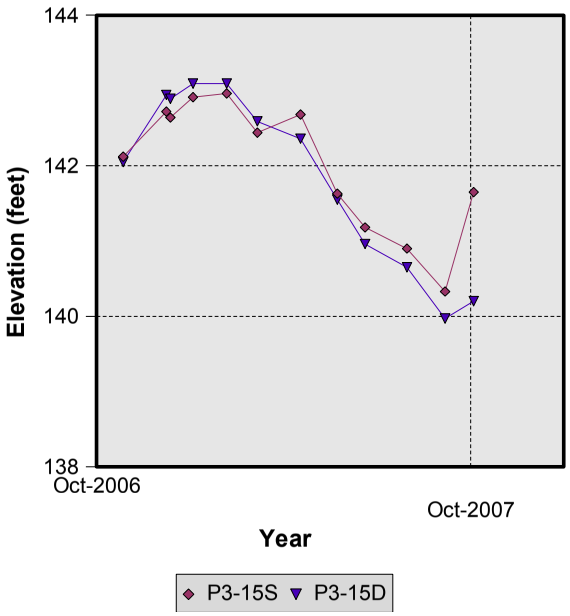


Table 3: Vertical Flow Compontents

Date	P3-18S	P3-18D	dh	dl (mid-point of saturated screen)	Vertical Gradient (dh/dl)
10/27/2006	129.02	130.08	1.06	23.43	0.05
12/08/2006	129.45	131.39	1.94	23.43	0.08
01/03/2007	129.63	131.76	2.13	23.43	0.09
02/05/2007	129.74	131.77	2.03	23.43	0.09
03/07/2007	129.43	131.68	2.25	23.43	0.10
04/18/2007	129.55	136.77	7.22	23.43	0.31
05/24/2007	128.32	134.61	6.29	23.43	0.27
06/20/2007	127.69	133.89	6.20	23.43	0.26
07/31/2007	127.65	133.49	5.84	23.43	0.25
09/06/2007	126.84	132.97	6.13	23.43	0.26
10/04/2007	127.73	133.15	5.42	23.43	0.23
		Average	**4.23**		**0.18**

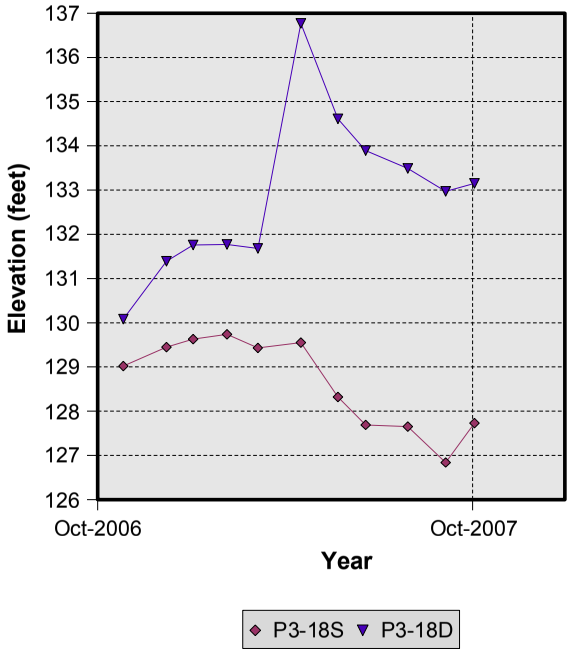


Table 4: Hydrogeologic Summary Table

Lithology	K (cm/sec)	Total Porosity (n)	Effective Porosity Range (n_e)	Effective Porosity (n_e)
Silty Clay/Clayey Silt	2.21E-04	35%	0.5-6.5%	3%
Silty Sand/Sandy Silt	9.89E-04	34%	18.5-20.8%	20%

NOTES:

1. Hydraulic Conductivity (K) values represented in this table are based on average observed values calculated for this Design Study.
2. n and ne were calculated based on the average derived from Table B-1 and B-3.

Table 5: Subgrade Separation Summary

Piezometer	Proposed Subgrade	Seasonal High Elevation	Estimated Long-Term Seasonal High Elevation	Top of Confining Layer	Vertical Separation of Subgrade above Seasonal High	Vertical Separation of Subgrade above Long-Term Seasonal High	Vertical Separation of Subgrade above Top of Competent Rock
P3-3	153.7	148.21	149.01	112	5.49	4.69	41.70
P3-4	159.8	150.42	151.22	112	9.33	8.53	47.75
P3-5	165.0	149.24	150.04	112	15.76	14.96	53.00
P3-6S	163.3	147.51	148.31	112	15.74	14.94	51.25
P3-6D	163.3	146.59	147.39	112	16.66	15.86	51.25
P3-8	158.0	145.47	145.47	112	12.53	12.53	46.00
P3-9	159.5	147.03	147.03	112	12.47	12.47	47.50
P3-11S	156.3	145.12	145.92	112	11.13	10.33	44.25
P3-11D	156.3	144.80	145.60	112	11.45	10.65	44.25
P3-12	151.0	142.72	142.72	112	8.28	8.28	39.00
P3-13	144.8	139.40	139.40	112	5.35	5.35	32.75
P3-14	151.0	140.45	141.25	112	10.55	9.75	39.00

Notes:
1. All data are in units of feet.
2. Proposed Subgrade elevations were extrapolated from the Application for Permit to Construct.
3. Long-Term Seasonal High Elevations were based on calculated elevations or extrapolated from Design Hydrogeologic Study Plate 4B.
4. Top of Confining Layer Elevation was based on measured boring depths.

Table 6: Proposed Monitoring Well Specifications

Well	Elevation (feet)				Depth below ground (feet)				
	Ground Surface	Estimated Seasonal High	Estimated Long-Term Seasonal High	Estimated Top of Confining Layer	Estimated Seasonal High	Estimated Long-Term Seasonal High	Confining Layer	Top of Screen	Completion Depth
MW-14	134.68	130.83	131.63	112	4	3.05	22.68	15	21
MW-15	129.01	129.74	129.74	112	-0.73	-0.73	17.01	10	16
MW-16	157.82	147.17	147.97	112	11	9.85	45.82	10	20

NOTES:
1. Seasonal High and Long-Term Seasonal High elevations and depths were taken from Plate 4B and Plate 4A.
2. Depth to the top of screen and completion depths are proposed depths and may change depending on field conditions.

GENERAL NOTES

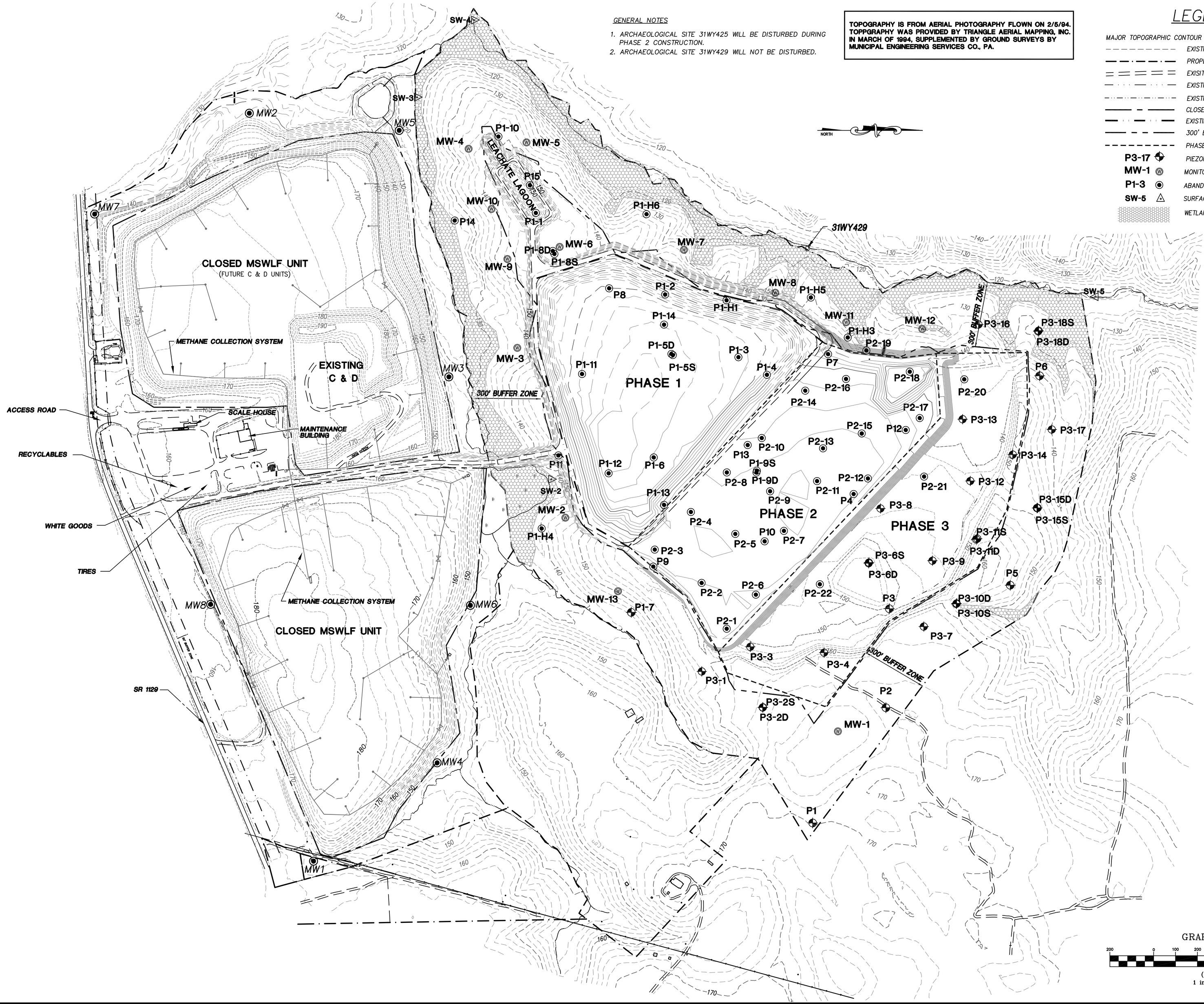
1. ARCHAEOLOGICAL SITE 31WY425 WILL BE DISTURBED DURING PHASE 2 CONSTRUCTION.
2. ARCHAEOLOGICAL SITE 31WY429 WILL NOT BE DISTURBED.

TOPOGRAPHY IS FROM AERIAL PHOTOGRAPHY FLOWN ON 2/5/94. TOPPGRAPHY WAS PROVIDED BY TRIANGLE AERIAL MAPPING, INC. IN MARCH OF 1994, SUPPLEMENTED BY GROUND SURVEYS BY MUNICIPAL ENGINEERING SERVICES CO., PA.

LEGEND

MAJOR TOPOGRAPHIC CONTOUR INTERVAL: 10 FEET

- EXISTING CONTOURS
- PROPERTY LINE
- EXISITING UNPAVED ROAD
- EXISTING CREEK, STREAM, ETC.
- EXISTING DIVERSION DITCHES
- CLOSED MSWLF SANITARY UNIT
- EXISTING MSWLF SANITARY UNIT
- 300' BUFFER ZONE
- PHASE LIMITS
- P3-17 PIEZOMETER LOCATION
- MW-1 MONITORING WELLS
- P1-3 ABANDONED PIEZOMETER
- SW-5 SURFACE WATER
- WETLANDS



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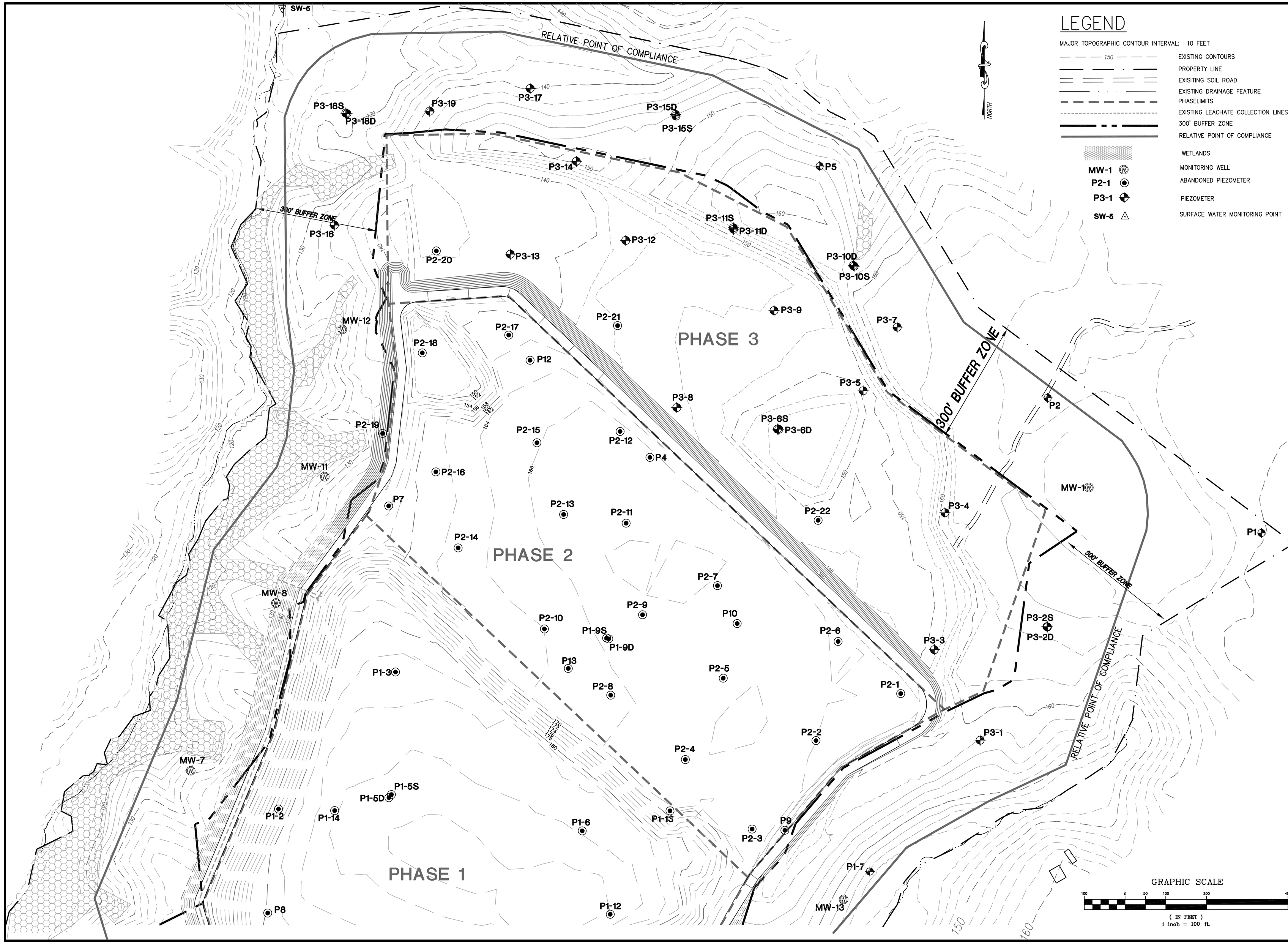
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

FACILITY BASE MAP

SCALE:	1" = 200'
DATE:	7/15/2008
DRWN. BY:	M. GERMAN
CHKD. BY:	S. PATRICK
PROJECT NUMBER	G06096.6
DRAWING NO.	PLATE 1
SHEET NO.	1 OF 1



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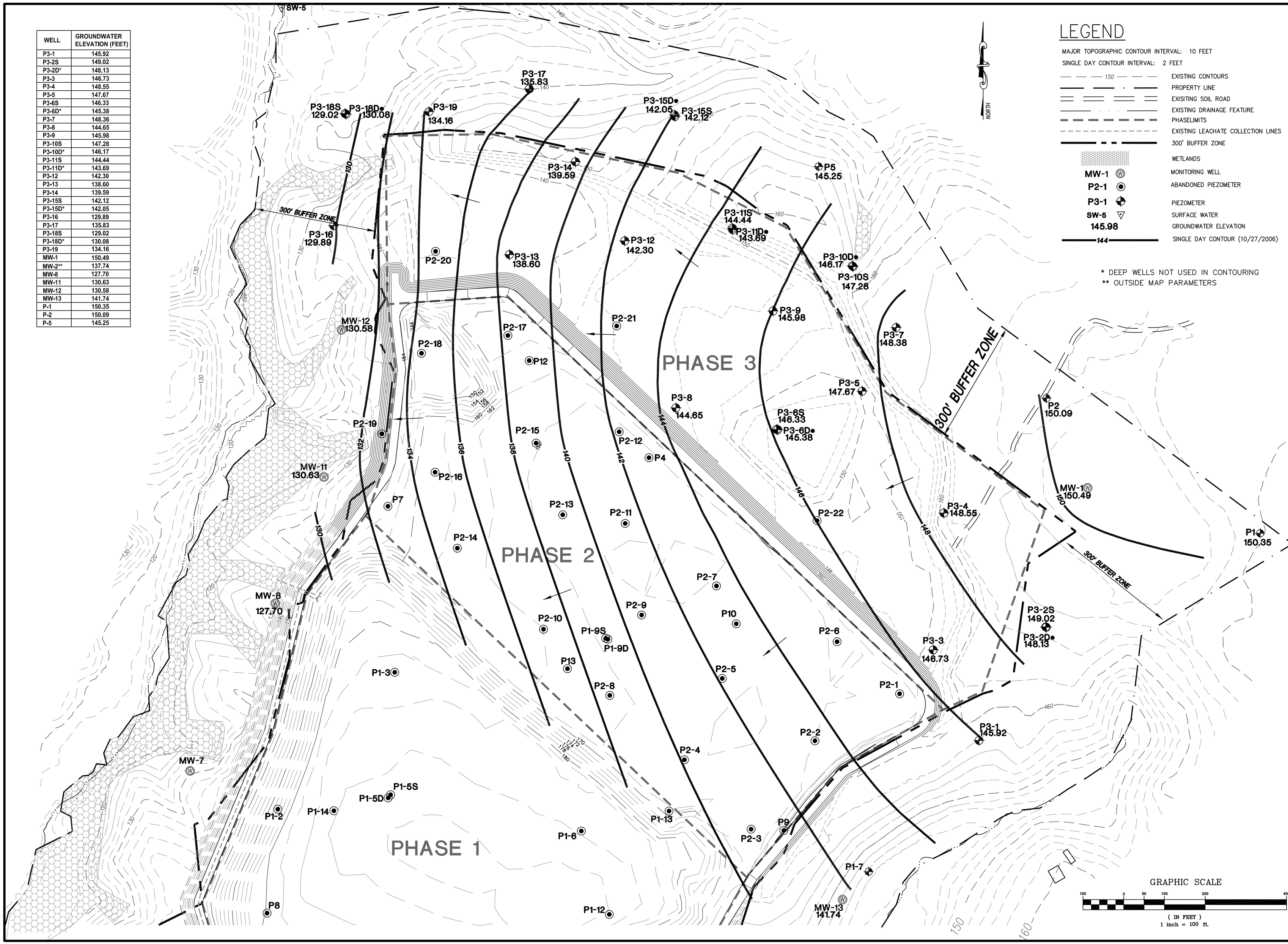
MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

BASE MAP OF PHASE 3 STUDY AREA

SCALE:	1"=100'
DATE:	7/15/2008
DRWN. BY:	M.GERMAN
CHKD. BY:	S. PATRICK
PROJECT NUMBER	G06096.6
DRAWING NO.	PLATE 2
SHEET NO.	1 of 1

WELL	GROUNDWATER ELEVATION (FEET)
P3-1	145.92
P3-2S	149.02
P3-2D*	148.13
P3-3	146.73
P3-4	148.55
P3-5	147.67
P3-6S	146.33
P3-6D*	145.38
P3-7	148.38
P3-8	144.65
P3-9	145.98
P3-10S	147.28
P3-10D*	146.17
P3-11S	144.44
P3-11D*	143.69
P3-12	142.30
P3-13	138.60
P3-14	139.59
P3-15S	142.12
P3-15D*	142.05
P3-16	129.89
P3-17	135.83
P3-18S	129.02
P3-18D*	130.08
P3-19	134.16
MW-1	150.49
MW-2**	137.74
MW-8	127.70
MW-11	130.63
MW-12	130.58
MW-13	141.74
P-1	150.35
P-2	150.09
P-5	145.25



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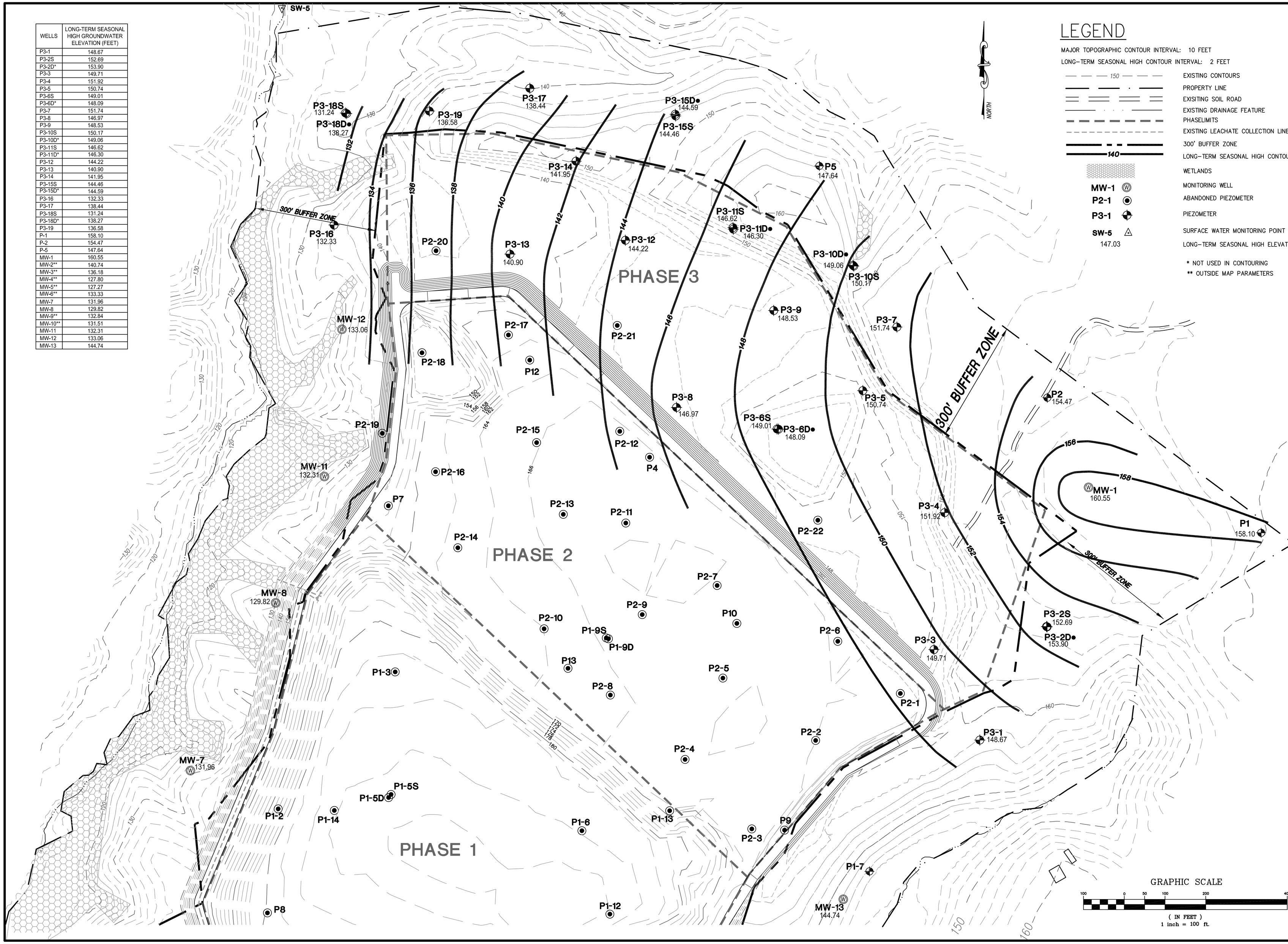
MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

SINGLE DAY POTENTIOMETRIC MAP (OCTOBER 27, 2006)

SCALE: 1"=100'
DATE: 7/11/2008
DRWN. BY: M.GERMAN
CHKD. BY: S. PATRICK
PROJECT NUMBER G06096.6
DRAWING NO. PLATE 3
SHEET NO. 1 of 1

WELLS	LONG-TERM SEASONAL HIGH GROUNDWATER ELEVATION (FEET)
P3-1	148.67
P3-2S	152.69
P3-2D*	153.90
P3-3	149.71
P3-4	151.92
P3-5	150.74
P3-6S	149.01
P3-6D*	148.09
P3-7	151.74
P3-8	146.97
P3-9	148.53
P3-10S	150.17
P3-10D*	149.06
P3-11S	146.62
P3-11D*	146.30
P3-12	144.22
P3-13	140.90
P3-14	141.95
P3-15S	144.46
P3-15D*	144.59
P3-16	132.33
P3-17	138.44
P3-18S	131.24
P3-18D*	138.27
P3-19	136.58
P-1	158.10
P-2	154.47
P-5	147.64
MW-1	160.55
MW-2**	140.74
MW-3**	136.18
MW-4**	127.80
MW-5**	127.27
MW-6**	133.33
MW-7	131.96
MW-8	129.82
MW-9**	132.84
MW-10**	131.51
MW-11	132.31
MW-12	133.06
MW-13	144.74



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MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

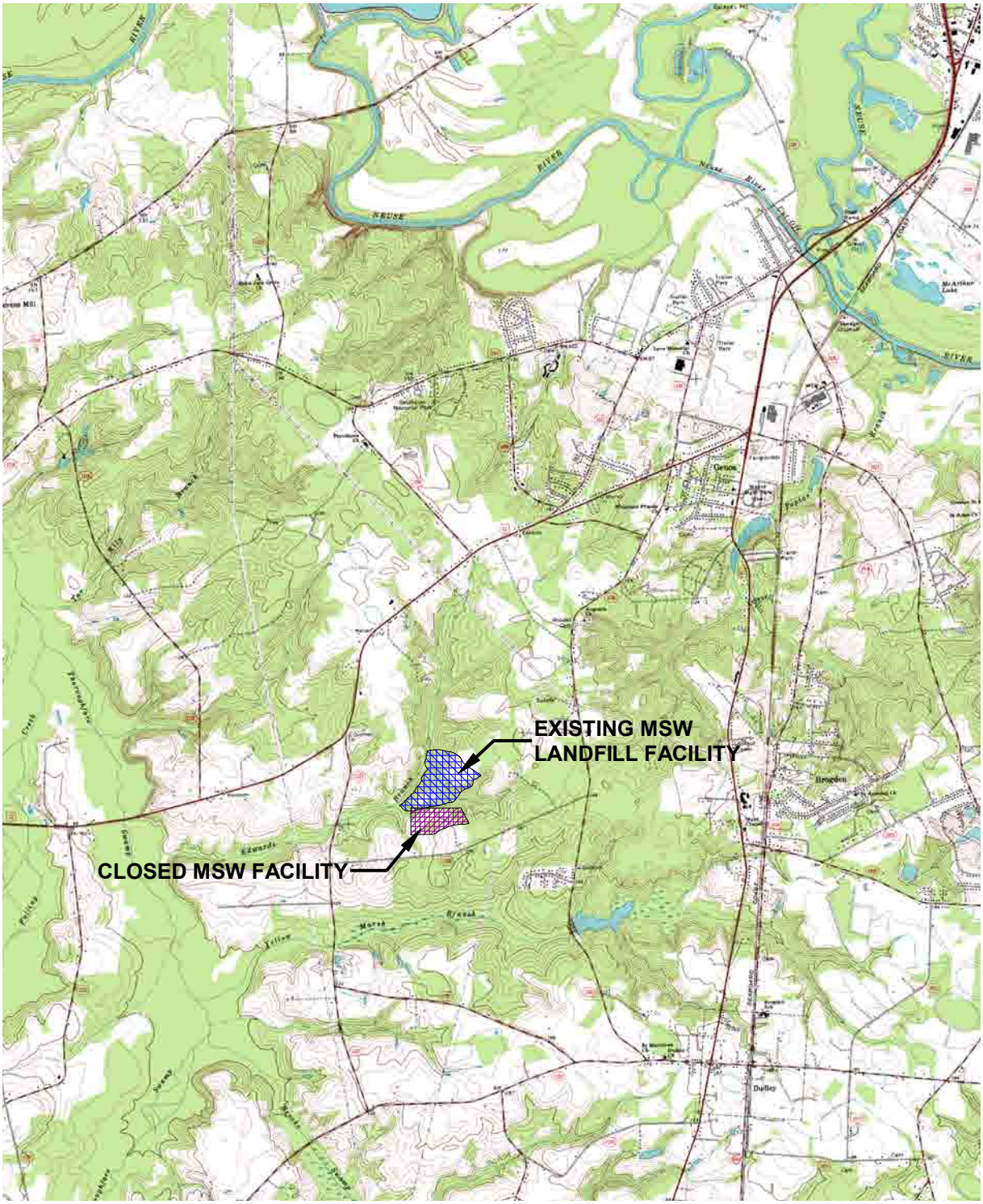
LONG-TERM SEASONAL HIGH

DATE	BY	REV.	DESCRIPTION

SCALE: 1"=100'
DATE: 7/15/2008
DRWN. BY: M.GERMAN
CHKD. BY: S. PATRICK
PROJECT NUMBER G06096.6
DRAWING NO. PLATE 4B
SHEET NO. 1 of 1

PLATE 5 Regional Characterization Map

Design Hydrogeologic Study – Wayne County Landfill, Phase 3



Date Completed	12/06/2007
Created By	M. German
Project Name	Design Hydrogeologic Study
Site Name	Wayne County Landfill
Project Number	G06096.6

Municipal Engineering Services Company, PA

1 0 1 MILE

QUADRANGLE LEGEND

ROAD CLASSIFICATION

Primary highway, hard surface

Light-duty road, hard or improved surface

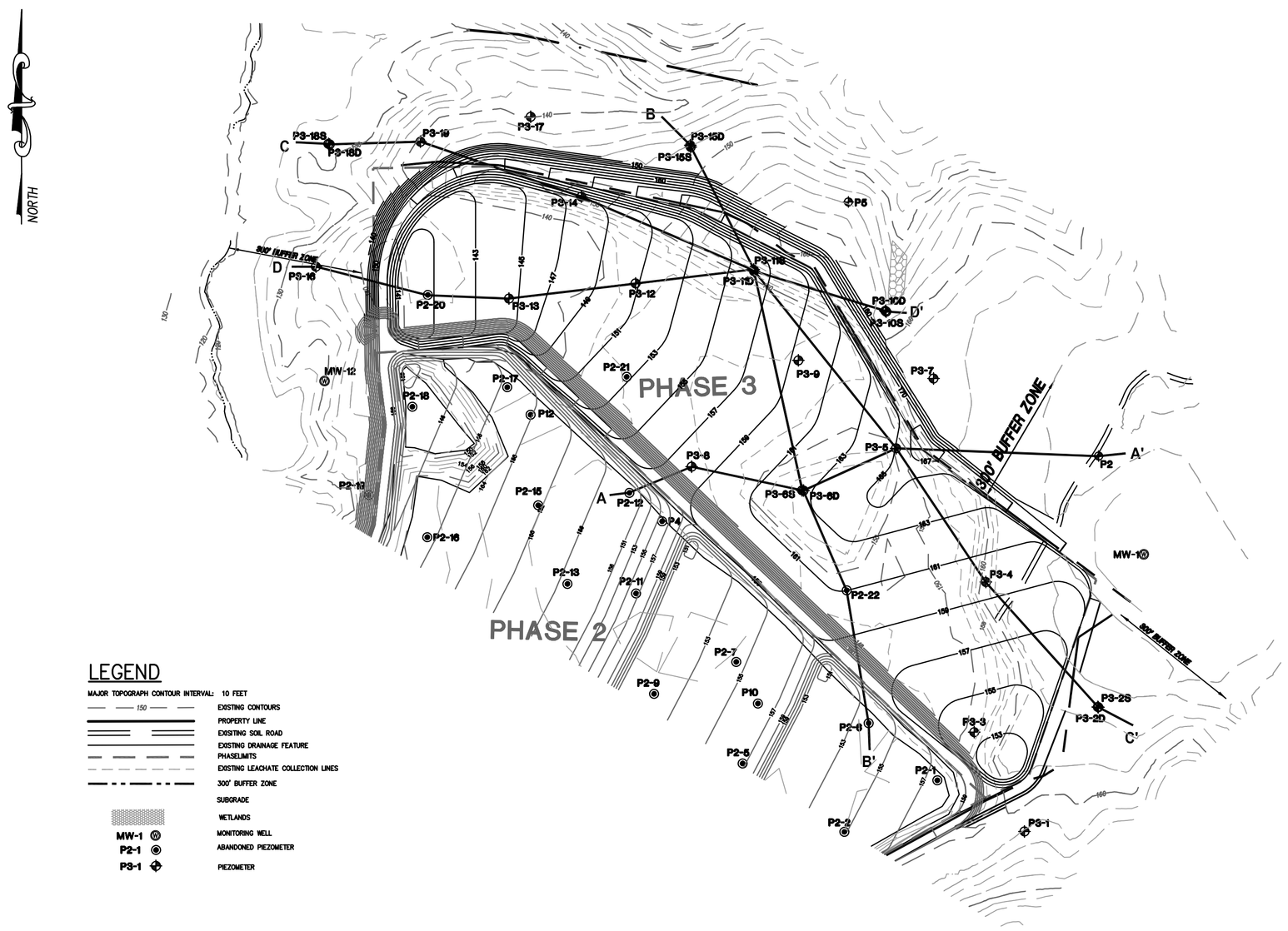
Secondary highway, hard surface

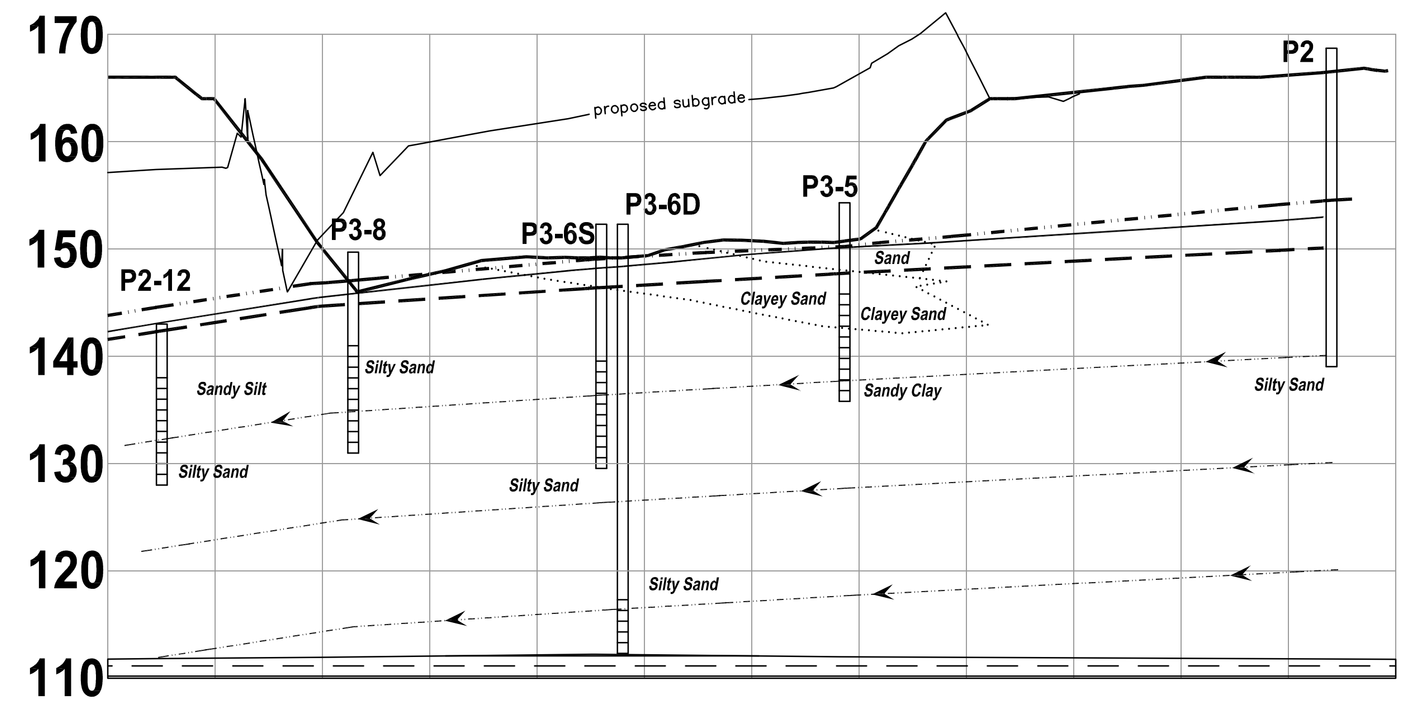
Unimproved road

Interstate Route

U. S. Route

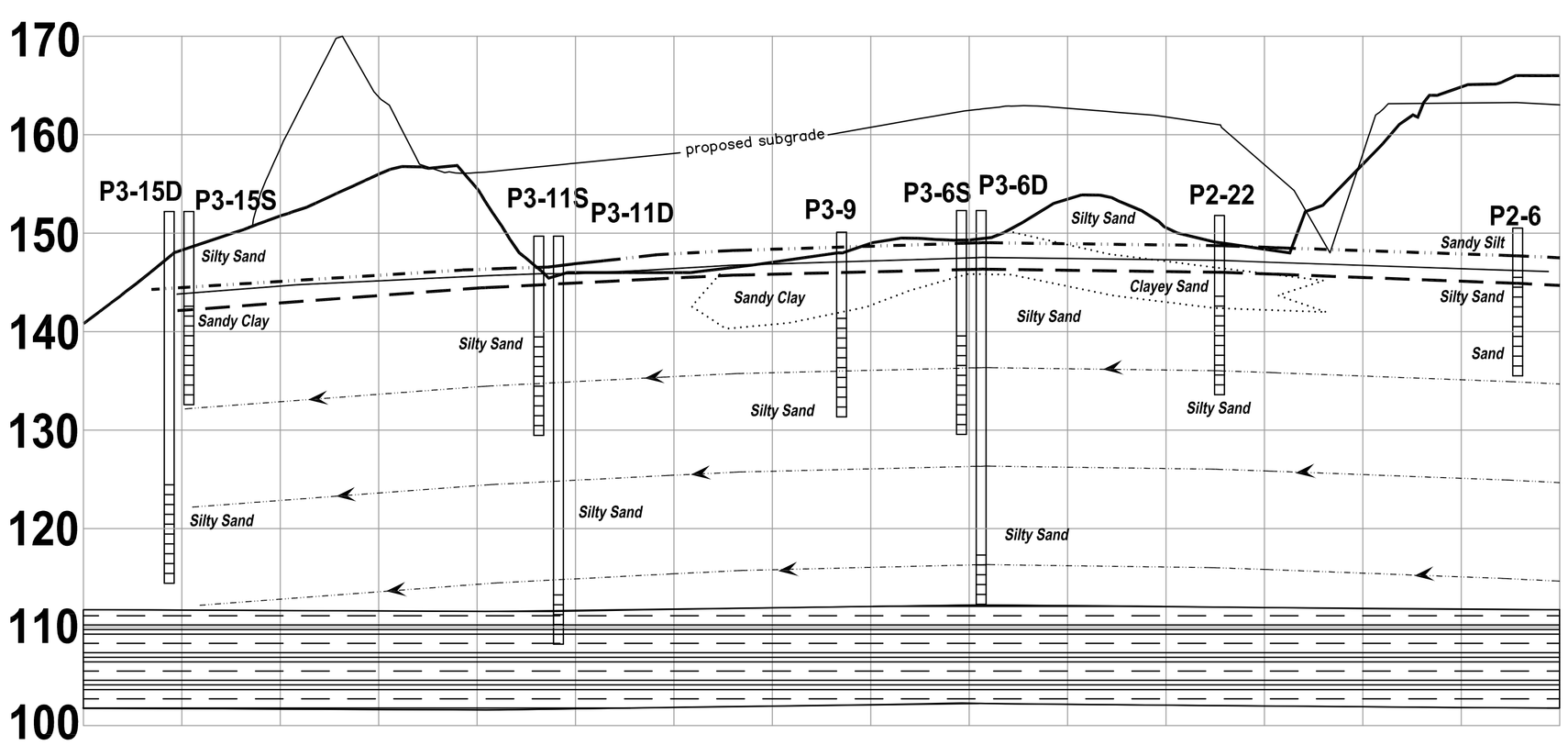
State Route





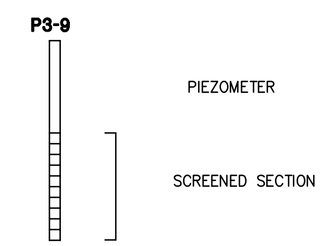
SECTION A-A'

SCALE HORIZ. 1" = 100'
VERT. 1" = 10'



SECTION B-B'

SCALE HORIZ. 1" = 100'
VERT. 1" = 10'



LEGEND:

- EXISTING GROUND SURFACE
- ESTIMATED STRATIGRAPIC CONTACT
- SINGLE DAY
- GROUNDWATER FLOW LINE
- SEASONAL HIGH
- LONG TERM SEASONAL HIGH
- CONFINING LAYER

NOTE:
- NUMBERS SHOWN IN THIS PLATE ARE IN UNITS OF FEET UNLESS INDICATED OTHERWISE.
- SOIL PROFILES SHOWN HEREIN ARE INTERPOLATED FROM AVAILABLE BORING RECORDS.
- SOIL PROFILE BOUNDARIES DO NOT NECESSARILY INDICATE ABRUPT CHANGE IN SOIL TEXTURES.
- SEASONAL HIGH WATER TABLE SURFACES WERE DERIVED FROM THEIR RESPECTIVE CONTOUR SURFACES ON PLATE 4A.

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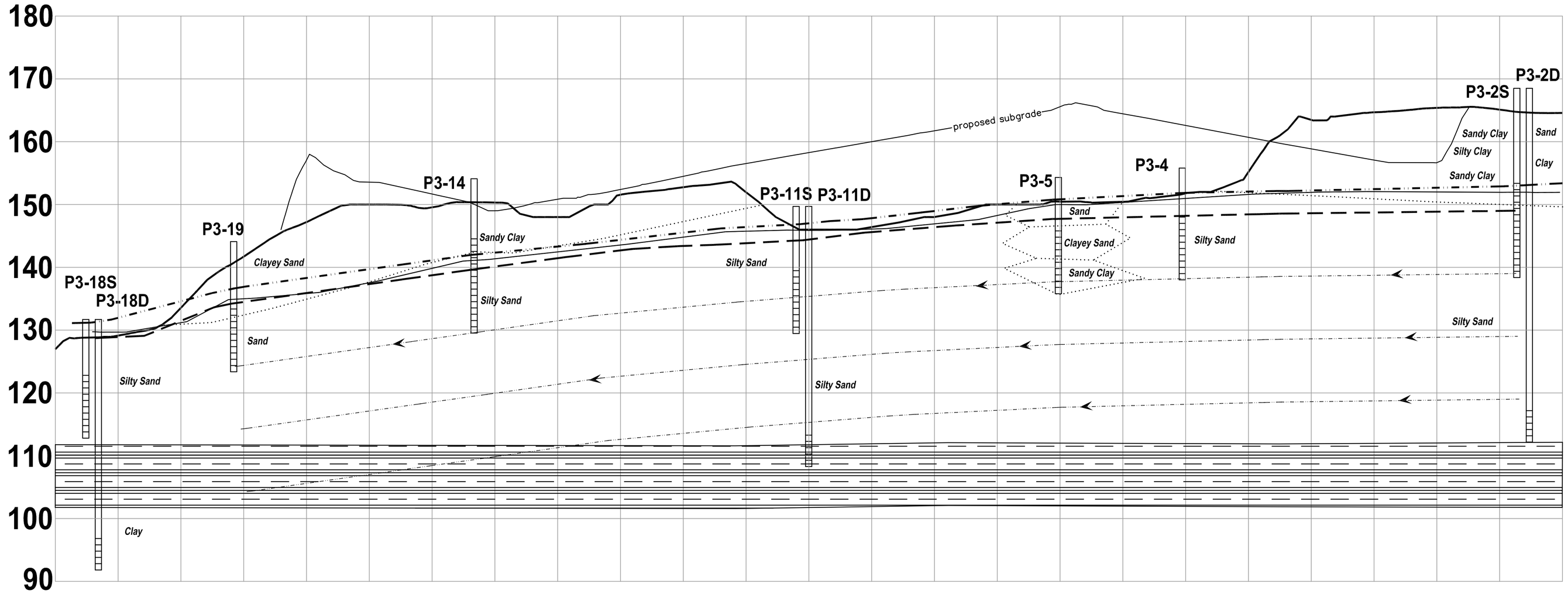
MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

LITHOLOGIC CROSS SECTIONS A-A' & B-B'

SCALE:	AS SHOWN
DATE:	7/15/2008
DRWN. BY:	M.GERMAN
CHKD. BY:	S. PATRICK
PROJECT NUMBER	G06096.6
DRAWING NO.	PLATE 6A
SHEET NO.	1 of 2



SECTION C-C'

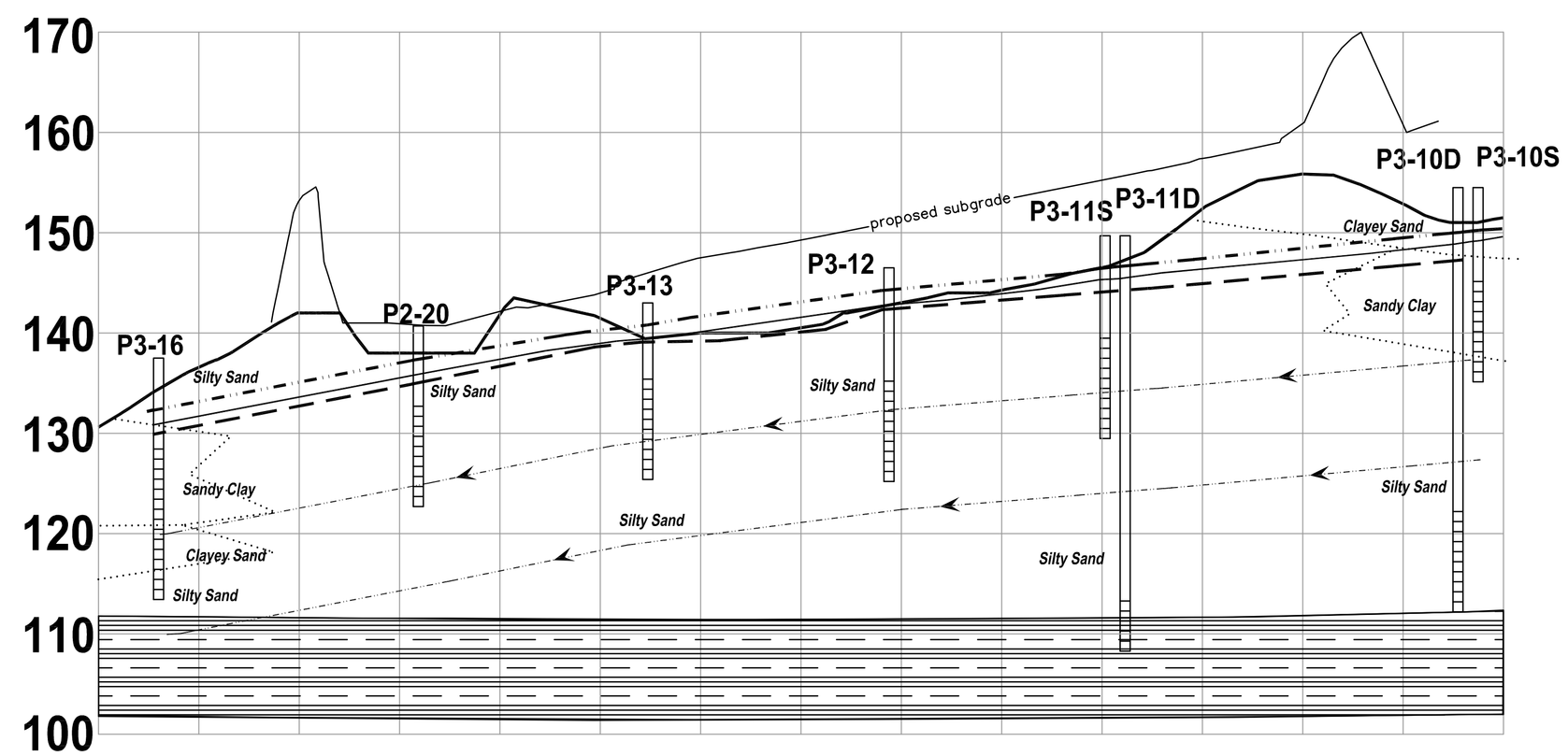
SCALE HORIZ. 1" = 100'
VERT. 1" = 10'

LEGEND:

- EXISTING GROUND SURFACE
- ESTIMATED STRATIGRAPIC CONTACT
- SINGLE DAY
- GROUNDWATER FLOW LINE
- SEASONAL HIGH
- LONG TERM SEASONAL HIGH
- CONFINING LAYER

P3-11S — PIEZOMETER

SCREENED SECTION



SECTION D-D'

SCALE HORIZ. 1" = 100'
VERT. 1" = 10'

NOTE:
- NUMBERS SHOWN IN THIS PLATE ARE IN UNITS OF FEET UNLESS INDICATED OTHERWISE.
- SOIL PROFILES SHOWN HEREIN ARE INTERPOLATED FROM AVAILABLE BORING RECORDS.
- SOIL PROFILE BOUNDARIES DO NOT NECESSARILY INDICATE ABRUPT CHANGE IN SOIL TEXTURES.
- SEASONAL HIGH WATER TABLE SURFACES WERE DERIVED FROM THEIR RESPECTIVE CONTOUR SURFACES IN PLATE 4A.

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P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

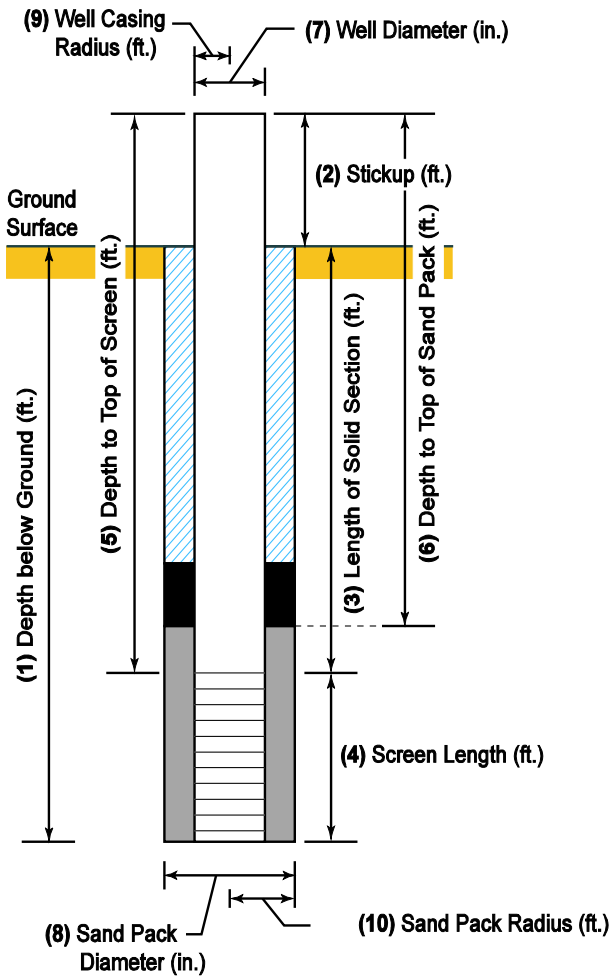
LITHOLOGIC CROSS SECTIONS
C-C' & D-D'

SCALE:	1"=100'
DATE:	7/15/2008
DRWN. BY:	M.GERMAN
CHKD. BY:	S. PATRICK
PROJECT NUMBER	G06096.6
DRAWING NO.	PLATE 6B
SHEET NO.	2 of 2

APPENDIX A

Table A-1. Piezometer Geometry Summary

Well	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
P3-1	20.28	3.38	10.28	10	13.66	12.63	2	8.5	0.08	0.35
P3-2S	27.00	3.13	12.00	15	15.13	14.13	2	8.5	0.08	0.35
P3-2D	53.80	2.51	48.80	5	51.31	50.26	2	8.5	0.08	0.35
P3-3	14.99	2.81	4.99	10	7.80	6.81	2	8.5	0.08	0.35
P3-4	14.83	2.97	4.83	10	7.80	6.97	2	8.5	0.08	0.35
P3-5	15.70	2.80	5.70	10	8.50	6.80	2	8.5	0.08	0.35
P3-6S	19.59	3.15	9.59	10	12.74	11.40	2	8.5	0.08	0.35
P3-6D	37.04	2.94	32.04	5	34.98	33.94	2	8.5	0.08	0.35
P3-7	16.83	3.06	6.83	10	9.89	7.56	2	8.5	0.08	0.35
P3-8	15.54	3.18	5.54	10	8.72	7.43	2	8.5	0.08	0.35
P3-9	15.67	3.08	5.67	10	8.75	7.58	2	8.5	0.08	0.35
P3-10S	16.12	3.25	6.12	10	9.37	8.40	2	8.5	0.08	0.35
P3-10D	39.19	3.11	29.19	10	32.30	31.11	2	8.5	0.08	0.35
P3-11S	17.03	3.20	7.03	10	10.23	9.20	2	8.5	0.08	0.35
P3-11D	38.42	3.01	33.42	5	36.43	35.51	2	8.5	0.08	0.35
P3-12	18.18	3.13	8.18	10	11.31	10.13	2	8.5	0.08	0.35
P3-13	14.45	3.16	4.45	10	7.61	7.16	2	8.5	0.08	0.35
P3-14	21.56	3.01	6.56	15	9.57	8.51	2	8.5	0.08	0.35
P3-15S	16.53	3.09	6.53	10	9.62	8.59	2	8.5	0.08	0.35
P3-15D	34.49	3.26	24.29	10	27.55	26.76	2	8.5	0.08	0.35
P3-16	21.24	2.83	6.24	15	9.07	8.08	2	8.5	0.08	0.35
P3-17	21.05	2.95	6.05	15	9.00	7.45	2	8.5	0.08	0.35
P3-18S	16.17	2.73	6.17	10	8.90	7.83	2	8.5	0.08	0.35
P3-18D	36.98	7.90	31.98	5	39.88	38.90	2	8.5	0.08	0.35
P3-19	17.74	3.00	7.74	10	10.74	9.50	2	8.5	0.08	0.35



NOTE:

1. Parameters in the table are numbered (1) through (10) and correspond to the numbers in the well diagram.
2. All data in this table is in units of feet except for well diameter (7) and and pack diameter (8) which are in units of inches.

LOG OF BORING: P3-1

Wayne County Landfill, Phase 3 **Project No. G06096.6**

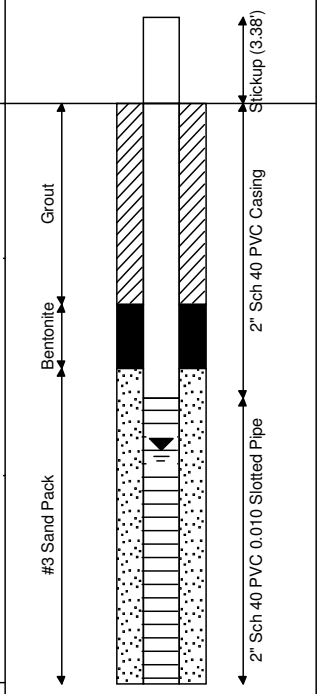
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" O.D. HSA w/ S.S
Logged by: J. Pfohl

Date started: 9/14/2006
Date ended: 9/14/2006
Completion depth: 20.28 ft
Stickup height: 3.38 ft

Surface elevation: 157.82 ft (MSL)
Top of pipe elevation: 161.20 ft (MSL)
Depth to water (TOB): 10.00 ft
Depth to water (24hrs): 12.13 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	8			Silty Clay with Sand; pale yellow brown, mottled with black top soil, fine root debris, moist
	25			Silty Clay with Sand; pale yellow brown, mottled, relict structure, root debris
5				Clay
	24			Clay; dark brown, light grey, mottled, cohesive, moist
10				
	6			Silty Sand; very light grey to white, fine grained, wet
15				
	7			Silty Sand; same as above, saturated
20				Boring terminated at 20.3 feet
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-2S

Wayne County Landfill, Phase 3 **Project No. G06096.6**

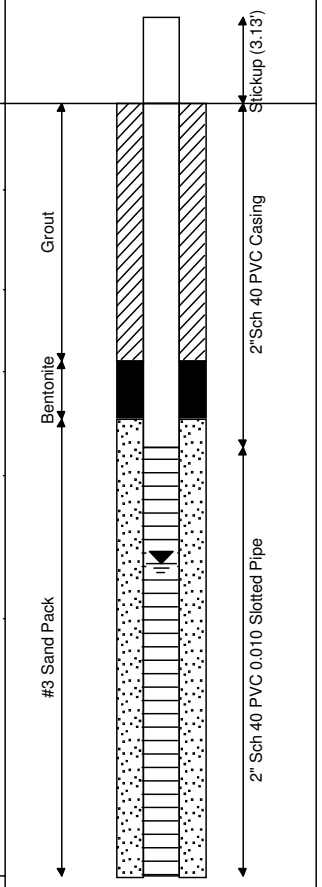
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA
Logged by: J. Pfohl

Date started: 9/14/2006
Date ended: 9/14/2006
Completion depth: 27.00 ft
Stickup height: 3.13 ft

Surface elevation: 165.45 ft (MSL)
Top of pipe elevation: 168.58 ft (MSL)
Depth to water (TOB): 17.00 ft
Depth to water (24hrs): 16.06 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	13			Sandy Clay; moderate yellow brown clay with medium grained pale brown and grey orange sand, mottled, damp
	6			Sand; grey orange, medium grained, damp
5	28			Silty Clay with Sand; light grey with yellow red mottles, very fine sand, cohesive, moist
10				Clay
	28			Silty Clay with Sand; light grey with yellow red mottles, very fine grained sand, cohesive, moist
15				
	5			Silty Sand; very light grey to white, fine grained, wet
20				
	6			Silty Sand; same as above
25				
				Boring terminated at 27.0 feet
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-2D

Wayne County Landfill, Phase 3 **Project No. G06096.6**

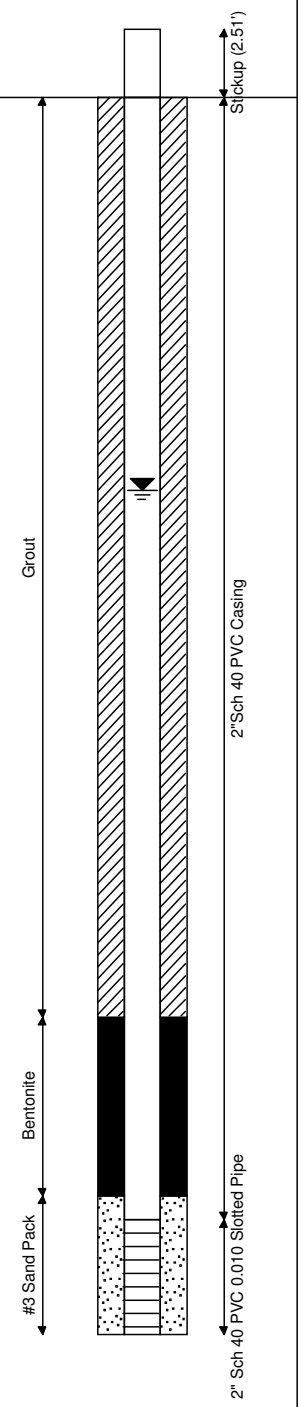
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/29/2006
Date ended: 9/29/2006
Completion depth: 53.80 ft
Stickup height: 2.51 ft

Surface elevation: 165.43 ft (MSL)
Top of pipe elevation: 167.94 ft (MSL)
Depth to water (TOB): 17.00 ft
Depth to water (24hrs): 17.07 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	13			Sandy Clay; moderate yellow brown clay with medium grained pale brown and grey orange sand, mottled, damp
	6			Sand; grey orange, medium grained, damp
5	28			Silty Clay with Sand; light grey with yellow red mottles, very fine sand, cohesive, moist
10				Fat Clay (CH) Gravel = 0.0%, Sand = 4.63%, Silt & Clay = 95.37%, LL=64, PL=23, PI=41
	28			Silty Clay with Sand; light grey with yellow red mottles, very fine grained sand, cohesive, moist
15	5			Silty Sand; very light grey to white, fine grained, wet
20	6			Silty Sand; same as above
25	6			Silty Sand; same as above
30	4			Silty Sand; very light grey to white, fine grained, trace clay nodules, wet
35	6			Silty Sand; very light grey to white, fine grained, saturated
40	8			Silty Sand; same as above
45	10			Silty Sand; same as above
50				Silty Sand; grey
55				Sandy Clay; dark grey, cohesive, fine to medium grained, bottom is black, confining layer, Black Creek Formation
				Boring terminated at 53.8 feet

Well Diagram



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LOG OF BORING: P3-3

Wayne County Landfill, Phase 3 **Project No. G06096.6**

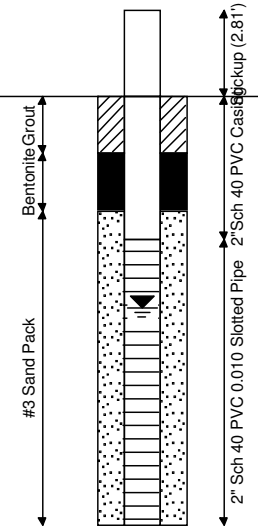
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/17/2006
Date ended: 9/17/2006
Completion depth: 14.99 ft
Stickup height: 2.81 ft

Surface elevation: 154.06 ft (MSL)
Top of pipe elevation: 156.87 ft (MSL)
Depth to water (TOB): 6.50 ft
Depth to water (24hrs): 7.37 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	3			Silty Sand; brown, medium grained sand with some clay, fine root debris, moist
	11			Clayey Sand; dark yellow orange, poorly sorted, fine to medium grained, trace light grey nodules, slightly plastic, moist
5				
	13			Silty Sand; pale yellow orange, poorly graded fine to medium grained, wet
10				
	4			Silty Sand; very pale orange, fine grained, saturated
15				Boring terminated at 15.0 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-4

Wayne County Landfill, Phase 3 **Project No. G06096.6**

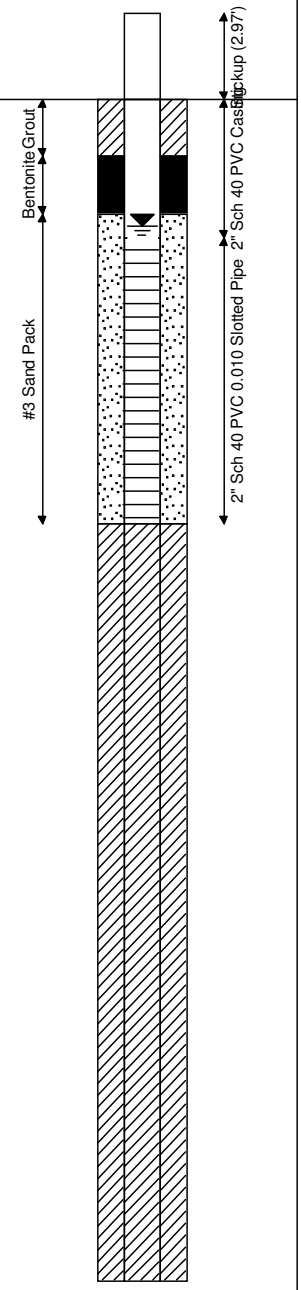
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" O.D. HSA w/ S.S
Logged by: J. Pfohl

Date started: 9/15/2006
Date ended: 9/15/2006
Completion depth: 41.30 ft
Stickup height: 2.97 ft

Surface elevation: 152.88 ft (MSL)
Top of pipe elevation: 155.85 ft (MSL)
Depth to water (TOB): 4.00 ft
Depth to water (24hrs): 4.41 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	3			Clayey Sand; grey orange with dark yellow orange and grey mottles, poorly sorted, fine to medium grained, cohesive, moist, root debris,
	12			Silty Sand; grey orange, with grey and dark yellow mottles, trace clay nodules, fine grained, moist
5	15			Silty Sand; light brown
				Silty Sand (SM) Gravel = 0.0%, Sand = 77.62%, Silt & Clay = 22.38%, Non-Plastic
10	4			Silty Sand; very pale orange, fine grained, poorly sorted, saturated
15	5			Silty Sand; same as above
20	6			Silty Sand; very pale orange to white, fine grained, poorly sorted, saturated
25	5			Silty Sand; same as above
30	4			Silty Sand; same as above
35	16			Silty Sand with Clay; medium to light grey, black clay nodules, moist
40				Black clay confining layer "black creek formation"
				Boring terminated at 41.3 feet
45				

Well Diagram



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Page 1 of 1

LOG OF BORING: P3-5

Wayne County Landfill, Phase 3 **Project No. G06096.6**

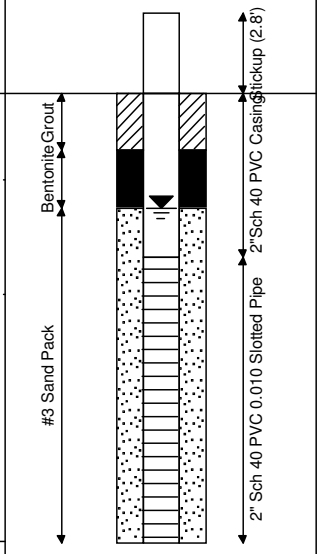
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA
Logged by: J. Pfohl

Date started: 10/1/2006
Date ended: 10/1/2006
Completion depth: 15.70 ft
Stickup height: 2.80 ft

Surface elevation: 151.51 ft (MSL)
Top of pipe elevation: 154.31 ft (MSL)
Depth to water (TOB): 4.00 ft
Depth to water (24hrs): 4.01 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	16			Sand; tan, moist, medium dense with silt, fine grained, trace coarse
5	28			Clayey Sand; tan, mottled orange, wet, medium dense, trace silt, fine grained
10	32			Sandy Clay; gray and red, moist, hard, fine grained, trace silt
15	34			Sandy Clay; same as above, wet
				Boring terminated at 15.7 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-6S

Wayne County Landfill, Phase 3 **Project No. G06096.6**

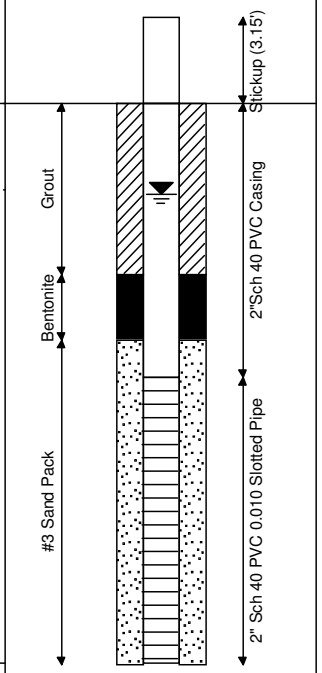
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA
Logged by: J. Pfohl

Date started: 9/18/2006
Date ended: 9/18/2006
Completion depth: 19.59 ft
Stickup height: 3.15 ft

Surface elevation: 149.16 ft (MSL)
Top of pipe elevation: 152.31 ft (MSL)
Depth to water (TOB): 3.50 ft
Depth to water (24hrs): 3.16 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	15			Clayey Sand; light brown, medium grained sand interlayerd with grey orange cohesive clay, root debris, slightly micaceous, moist
	9			Silty Sand with Clay; moderate orange pink, fine grained sand with grey orange mottled clay, moist
5				
	6			Silty Sand; very light grey to white, poorly sorted, few mottled clay nodules, wet
10				
	16			Silty Sand; grey orange, fine grained, relict structure, slightly micaceous, moist
15				
	5			Silty Sand; grey orange, fine grained, slightly micaceous, saturated
20				Boring terminated at 19.6 feet
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-6D

Wayne County Landfill, Phase 3 **Project No. G06096.6**

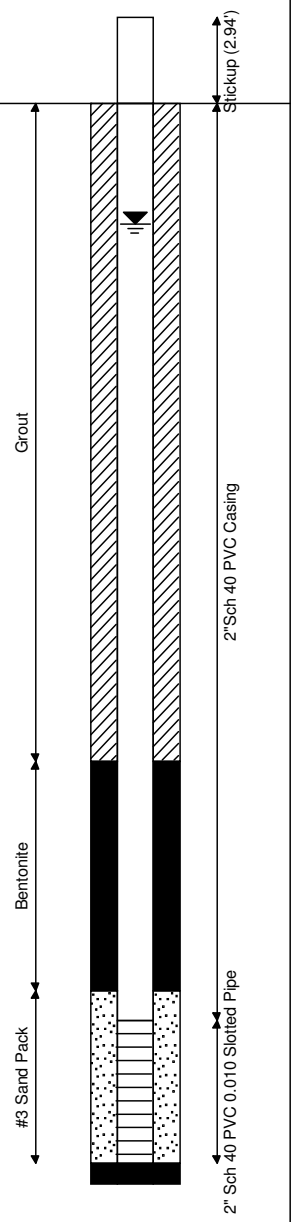
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/27/2006
Date ended: 9/27/2006
Completion depth: 37.75 ft
Stickup height: 2.94 ft

Surface elevation: 149.24 ft (MSL)
Top of pipe elevation: 152.18 ft (MSL)
Depth to water (TOB): 3.50 ft
Depth to water (24hrs): 4.19 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	15			Clayey Sand; light brown, medium grained sand interlayerd with grey orange cohesive clay, root debris, slightly micaceous, moist
	9			Silty Sand with Clay; moderate orange pink, fine grained sand with grey orange mottled clay, moist
5				
	6			Silty Sand; very light grey to white, poorly sorted, few mottled clay nodules, wet
10				
	16			Silty Sand; grey orange, fine grained, relict structure, slightly micaceous, moist
15				
	5			Silty Sand; grey orange, fine grained, slightly micaceous, saturated
20				
	8			Silty Sand; same as above
25				
	8			Silty Sand; grey orange, fine grained sand with very pale orange silt interlayered, slightly micaceous, saturated
30				
	6			Silty Sand; same as above
35				Silty Sand with Clay; medium to light grey, black clay nodules
				hard black clay confining layer "black creek formation"
				Boring terminated at 37.8 feet
40				
45				

Well Diagram



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LOG OF BORING: P3-7

Wayne County Landfill, Phase 3 **Project No. G06096.6**

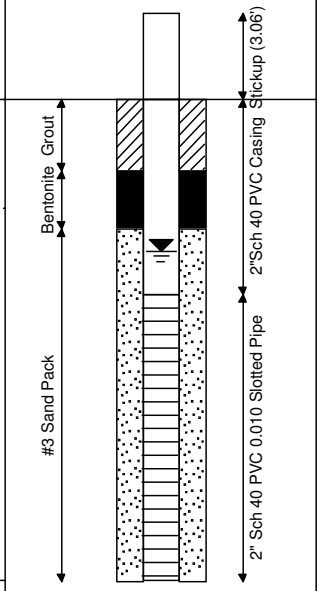
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/19/2006
Date ended: 9/19/2006
Completion depth: 16.83 ft
Stickup height: 3.06 ft

Surface elevation: 153.80 ft (MSL)
Top of pipe elevation: 156.86 ft (MSL)
Depth to water (TOB): 5.00 ft
Depth to water (24hrs): 5.30 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	10			Sandy Clay; moderate yellow brown and very pale orange mottled clay with fine to medium grained sand, few fine root fragments, cohesive, moist
	8			Sandy Silt; grey orange silt interlayered with fine grained very pale orange sand, few mottled clay nodules, moist
5				
	6			Silty Sand; very light grey to white, poorly graded, wet
10				
	6			Silty Sand; same as above, saturated
15				
				Boring terminated at 16.8 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-8

Wayne County Landfill, Phase 3 **Project No. G06096.6**

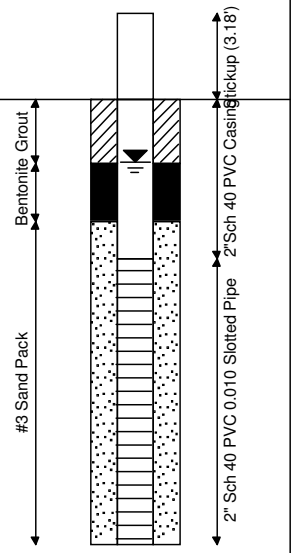
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/18/2006
Date ended: 9/18/2006
Completion depth: 15.54 ft
Stickup height: 3.18 ft

Surface elevation: 146.54 ft (MSL)
Top of pipe elevation: 149.72 ft (MSL)
Depth to water (TOB): 2.00 ft
Depth to water (24hrs): 2.21 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	2			Silty Sand; moderate yellow brown, medium grained, trace dark grey organic top soil with roots, few cohesive clay nodules, moist
	12			Silty Sand; moderate red orange, interlayered with fine grained yellow orange, trace mottled cohesive clay nodules, wet
5				
	3			Silty Sand; grey orange, fine to medium grained, saturated
10				
	3			Silty Sand; very pale orange, fine to medium grained, saturated
15				Boring terminated at 15.5 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-9

Wayne County Landfill, Phase 3 **Project No. G06096.6**

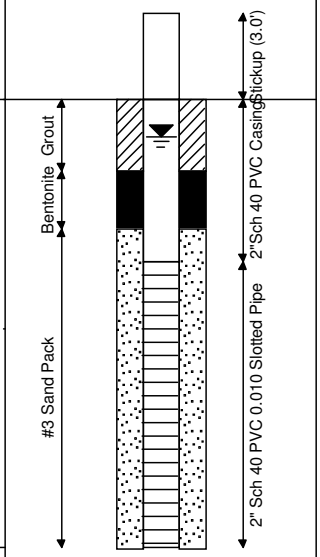
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/18/2006
Date ended: 9/18/2006
Completion depth: 15.67 ft
Stickup height: 3.08 ft

Surface elevation: 147.01 ft (MSL)
Top of pipe elevation: 150.09 ft (MSL)
Depth to water (TOB): 1.00 ft
Depth to water (24hrs): 1.30 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	4			Sandy Clay; dark yellow orange and very pale orange, mottled, cohesive, fine grained, moist
				Sandy Clay, dark yellow orange, cohesive, fine grained, moist
5				Fat Clay (CH) Gravel = 0.0%, Sand = 7.19%, Silt & Clay = 92.81%, LL=67, PL=22, PI=45
	4			Silty Sand; very pale orange, fine grained sand, saturated
10				Sandy Silt (ML) Gravel = 0.0%, Sand = 32.45%, Silt & Clay = 67.55%, LL=49, PL=28, PI=21
	5			Silty Sand; same as above
15				Boring terminated at 15.7 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-10S

Wayne County Landfill, Phase 3 **Project No. G06096.6**

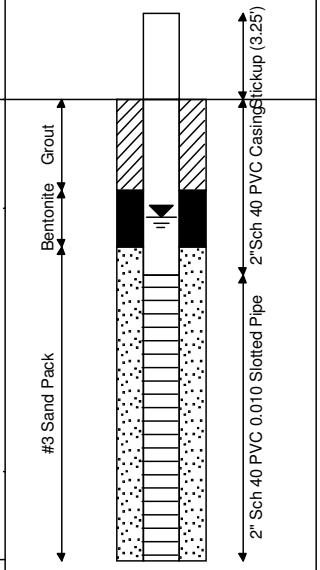
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA
Logged by: J. Pfohl

Date started: 9/11/2006
Date ended: 9/11/2006
Completion depth: 16.12 ft
Stickup height: 3.25 ft

Surface elevation: 151.23 ft (MSL)
Top of pipe elevation: 154.48 ft (MSL)
Depth to water (TOB): 4.00 ft
Depth to water (24hrs): 4.12 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	3			Clayey Sand; moderately yellow brown, medium grained sand with pale yellow brown and light brown mottled clay nodules, few fine roots, relict structure, moist
	4			Sandy Clay; moderately yellow brown and very pale orange, mottled, cohesive, fine grained, few root fragments, moist
5				
	8			Sandy Clay; moderately yellow brown and very pale orange, mottled, very cohesive, sand fine grained, moist
10				
	7			Silty Sand; very pale orange, fine grained, wet
15				
				Boring terminated at 16.1 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-10D

Wayne County Landfill, Phase 3 **Project No. G06096.6**

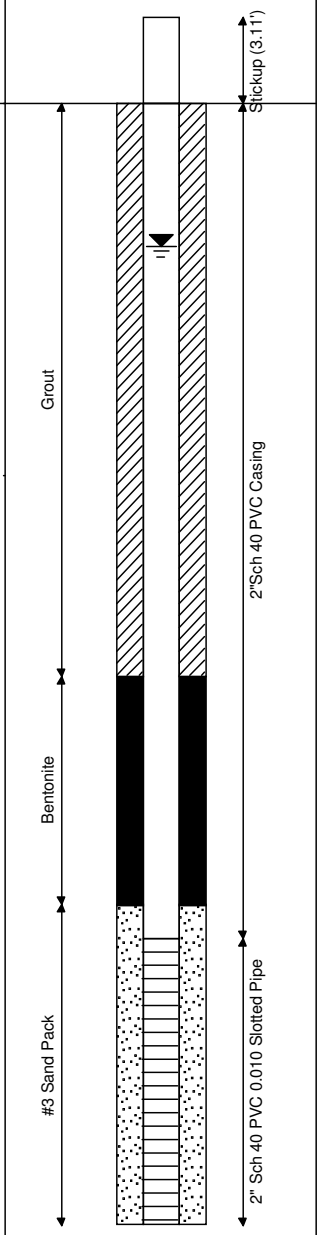
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/27/2006
Date ended: 9/27/2006
Completion depth: 39.19 ft
Stickup height: 3.11 ft

Surface elevation: 150.96 ft (MSL)
Top of pipe elevation: 154.07 ft (MSL)
Depth to water (TOB): 4.00 ft
Depth to water (24hrs): 5.00 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	3			Clayey Sand; moderately yellow brown, medium grained sand with pale yellow brown and light brown mottled clay nodules, few fine roots, relict structure, moist
	4			Sandy Clay; moderately yellow brown and very pale orange, mottled, cohesive, fine grained, few root fragments, moist
5				
	8			Sandy Clay; moderately yellow brown and very pale orange, mottled, very cohesive, fine grained, moist
10				
	7			Silty Sand; very pale orange, fine grained, wet
15				
	5			Silty Sand with Clay; very pale orange, fine grained sand with moderate yellow brown and very pale orange morttled clay nodules, wet
20				
	12			Silty Sand; very pale orange, fine grained, saturaed
25				
	13			Silty Sand; same as above
30				
	11			Silty Sand; same as above
35				Silty Sand with Clay; medium light grey, black clay nodules
				hard black clay confining layer "black creek formation"
40				Boring terminated at 39.2 feet
45				

Well Diagram



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LOG OF BORING: P3-11S

Wayne County Landfill, Phase 3 **Project No. G06096.6**

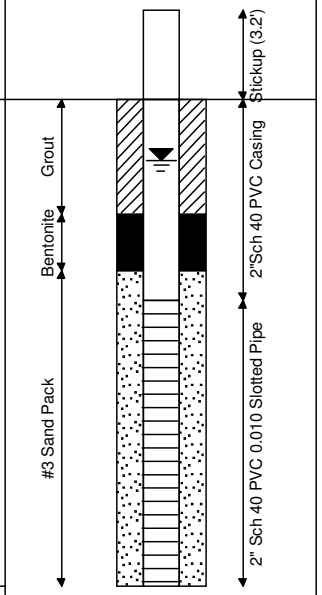
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA
Logged by: J. Pfohl

Date started: 9/25/2006
Date ended: 9/25/2006
Completion depth: 17.03 ft
Stickup height: 3.20 ft

Surface elevation: 146.53 ft (MSL)
Top of pipe elevation: 149.73 ft (MSL)
Depth to water (TOB): 2.00 ft
Depth to water (24hrs): 2.13 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	5			Silty Sand; dark yellow orange, trace clay, moist
	4			Silty Sand; same as above
5				
	12			Silty Sand; grey orange, fine to medium grained, moist
10				
	7			Silty Sand; same as above
15				
				Boring terminated at 17.0 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-11D

Wayne County Landfill, Phase 3 **Project No. G06096.6**

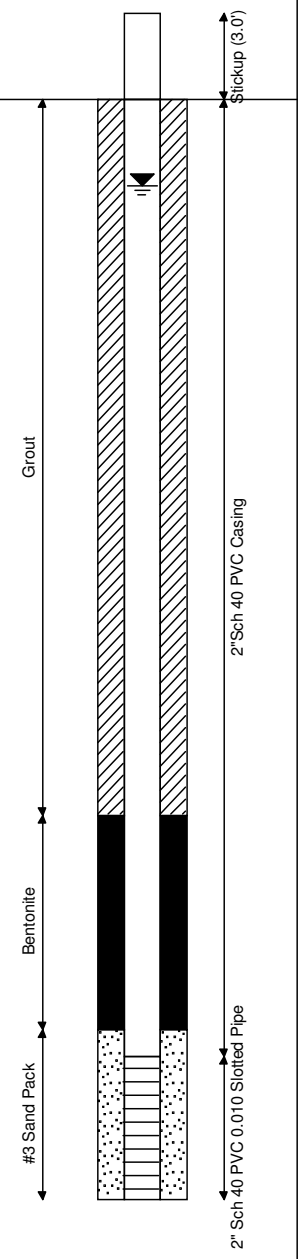
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/11/2006
Date ended: 9/11/2006
Completion depth: 38.42 ft
Stickup height: 3.01 ft

Surface elevation: 146.58 ft (MSL)
Top of pipe elevation: 149.59 ft (MSL)
Depth to water (TOB): 2.00 ft
Depth to water (24hrs): 3.00 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	5			Silty Sand; dark yellow orange, trace clay, moist
	4			Silty Sand; same as above
5				
	12			Silty Sand; grey orange, fine to medium grained,moist
10				
	7			Silty Sand; same as above
15				
	7			Silty Sand; same as above, saturated
20				
	3			Silty Sand; grey orange, fine to medium grained, saturated
25				
	11			Silty Sand; grey orange, fine to medium grained, saturated
30				Silty Sand with Clay; grey to white, hard
	26			Silty Sand with Clay; moderate light grey, black clay nodules, moist
35				hard black clay confining layer "black creek formation"
				Boring terminated at 38.4 feet
40				
45				

Well Diagram



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LOG OF BORING: P3-12

Wayne County Landfill, Phase 3 **Project No. G06096.6**

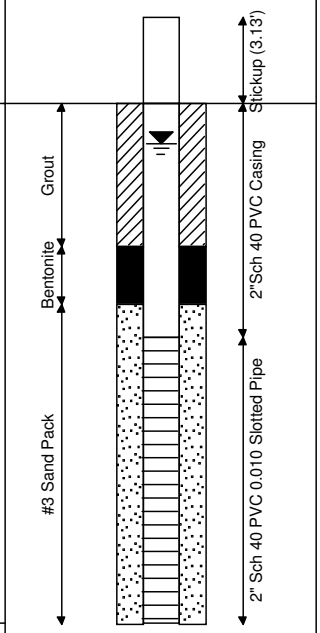
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/27/2006
Date ended: 9/27/2006
Completion depth: 18.18 ft
Stickup height: 3.13 ft

Surface elevation: 143.46 ft (MSL)
Top of pipe elevation: 146.59 ft (MSL)
Depth to water (TOB): 1.00 ft
Depth to water (24hrs): 1.40 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	6			Silty Sand; grey orange, poorly graded, fine to medium grained, trace root fragments, moist
	15			Silty Sand; moderate brown, medium grained, few round gravel size rock fragments, moist
5				
	7			Silty Sand; grey orange, fine grained sand with laminated very pale orange silt, wet
10				
	3			Silty Sand; very light grey to white, poorly graded, fine grained, saturated
15				
				Boring terminated at 18.2 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-13

Wayne County Landfill, Phase 3 **Project No. G06096.6**

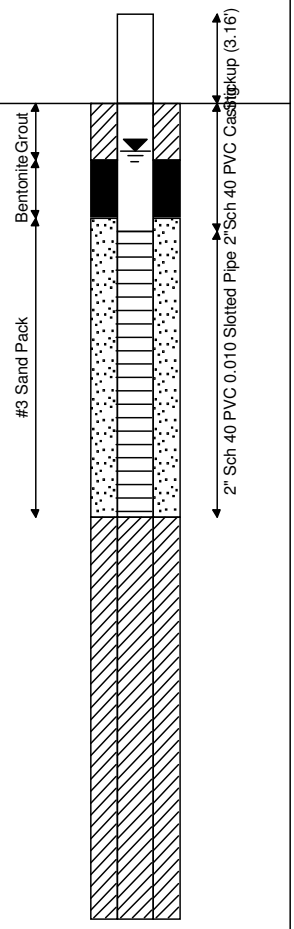
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/26/2006
Date ended: 9/26/2006
Completion depth: 28.50 ft
Stickup height: 3.16 ft

Surface elevation: 139.88 ft (MSL)
Top of pipe elevation: 143.04 ft (MSL)
Depth to water (TOB): 1.00 ft
Depth to water (24hrs): 1.67 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	8			Silty Sand; brown grey orange, fine to medium grained, trace root fragments, trace black organic silt partings, poorly graded, moist
	7			Silty Sand; same as above
5				
	3			Silty Sand; grey orange, fine grained, poorly graded, wet
10				
	3			Silty Sand; very light grey to white, fine grained, poorly sorted, saturated
15				
	2			Silty Sand; no recovery, samples too saturated
20				
	5			Silty Sand; grey blue green, poorly graded, fine to medium grained, saturated
25				Silty Sand with Clay
				Silty Sand; dark grey, confining layer Black Creek Formation
30				Silty Sand (SM) Gravel = 2.36%, Sand = 79.12%, Silty & Clay = 18.52%, LL=40, PL=27, PI=13
				Boring terminated at 28.5 feet
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-14

Wayne County Landfill, Phase 3 **Project No. G06096.6**

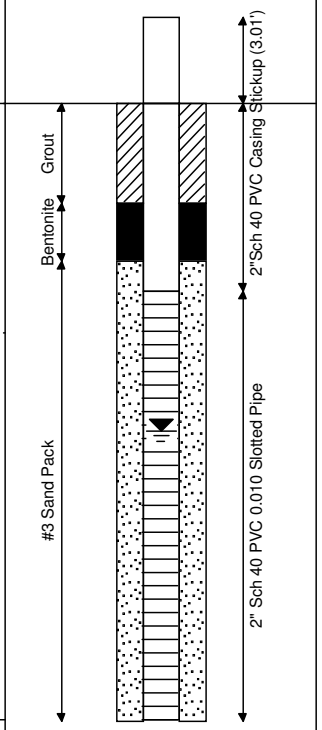
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/19/2006
Date ended: 9/19/2006
Completion depth: 21.56 ft
Stickup height: 3.01 ft

Surface elevation: 151.16 ft (MSL)
Top of pipe elevation: 154.17 ft (MSL)
Depth to water (TOB): 11.50 ft
Depth to water (24hrs): 11.44 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	7			Sandy Clay; light brown with dark yellow orange mottles, trace fine grained sand, very cohesive, root debris, moist
	29			Sandy Clay; light brown, trace fine grained sand, cohesive, moist
5				
	11			Silty Sand; grey orange, fine grained sand, laminated with very pale orange silt, trace clay, moist
10				
	10			Silty Sand; same as above without clay
15				
	6			Silty Sand; grey orange, fine grained sand laminated with very pale orange silt, saturated
20				
				Boring terminated at 21.6 feet
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-15S

Wayne County Landfill, Phase 3 **Project No. G06096.6**

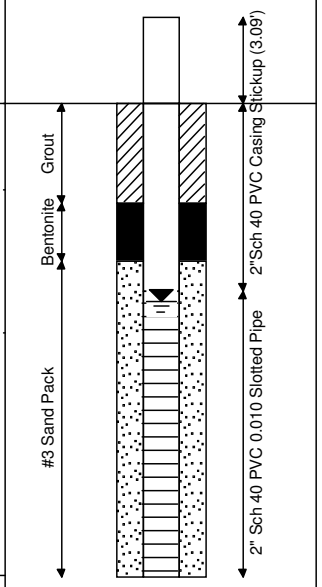
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/21/2006
Date ended: 9/21/2006
Completion depth: 16.53 ft
Stickup height: 3.09 ft

Surface elevation: 149.14 ft (MSL)
Top of pipe elevation: 152.23 ft (MSL)
Depth to water (TOB): 7.00 ft
Depth to water (24hrs): 6.92 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	6			Silty Sand with Clay; dusky yellow brown, medium grained sand with organic top soil, root debris, trace grey orange clay, moist
	24			Sandy Clay; moderate yellow brown, medium grained sand laminated with cohesive clay, moist
5				
	22			Silty Sand; grey orange, medium to coarse grained, micaceous, moist
10				
	6			Silty Sand; very light grey to white, fine to medium grained, moist
15				
				Boring terminated at 16.5 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-15D

Wayne County Landfill, Phase 3 **Project No. G06096.6**

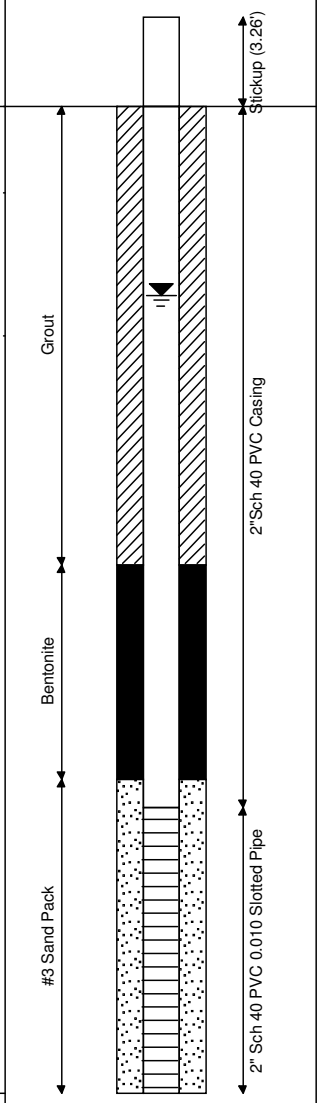
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/22/2006
Date ended: 9/22/2006
Completion depth: 34.49 ft
Stickup height: 3.26 ft

Surface elevation: 148.98 ft (MSL)
Top of pipe elevation: 152.24 ft (MSL)
Depth to water (TOB): 7.00 ft
Depth to water (24hrs): 6.60 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	6			Silty Sand with Clay; dusky yellow brown, medium grained sand with organic top soil, root debris, trace grey orange clay, moist
	24			Sandy Clay; moderate yellow brown, medium grained sand laminated with cohesive clay, moist
5				
	22			Silty Sand; grey orange, medium to coarse grained, micaceous, moist
10				
	6			Silty Sand; very light grey to white, fine to medium grained, moist
15				
	5			Silty Sand; same as above
20				
	3			Silty Sand; very light grey to white, fine grained, saturated
25				
	4			Silty Sand; same as above
30				
	25			Silty Sand with Clay; moderately light grey, black clay nodules, moist
35				Boring terminated at 34.5 feet
40				
45				

Well Diagram



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LOG OF BORING: P3-16

Wayne County Landfill, Phase 3 **Project No. G06096.6**

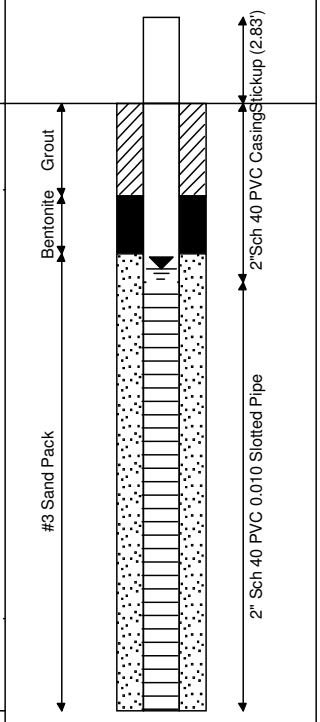
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/21/2006
Date ended: 9/21/2006
Completion depth: 21.24 ft
Stickup height: 2.83 ft

Surface elevation: 134.68 ft (MSL)
Top of pipe elevation: 137.51 ft (MSL)
Depth to water (TOB): 8.50 ft
Depth to water (24hrs): 5.78 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	4			Silty Sand; brown, medium grained, top soil 0.00-0.25', black with root debris
	11			Sandy Clay; moderate yellow brown, cohesive, moist
5				
	21			Sandy Clay; moderate yellow brown, medium grained, moist
10				
	4			Clayey Sand; grey blue green, poorly graded, fine to medium grained, moist
15				
	4			Silty Sand; grey blue green, poorly graded, fine to medium grained, wet
20				
				Boring terminated at 21.2 feet
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-17

Wayne County Landfill, Phase 3 **Project No. G06096.6**

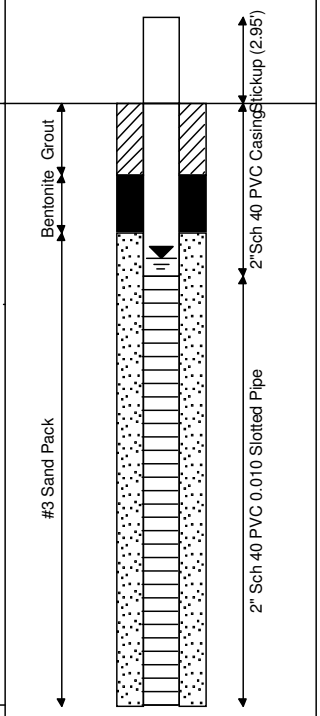
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/25/2006
Date ended: 9/25/2006
Completion depth: 21.05 ft
Stickup height: 2.95 ft

Surface elevation: 140.37 ft (MSL)
Top of pipe elevation: 143.32 ft (MSL)
Depth to water (TOB): 10.00 ft
Depth to water (24hrs): 5.43 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	7			Sandy Clay; light brown with dark yellow orange, mottles, fine grained, cohesive, root debris, moist
	8			Sandy Clay; same as above without roots
5				
	12			Silty Sand; grey orange, fine grained sand laminated with very pale orange silt, trace clay, moist
10				
	10			Silty Sand; same as above but lacks clay
15				
	3			Silty Sand; very light grey to white, fine to medium grained, saturated
20				
				Boring terminated at 21.1 feet
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-18S

Wayne County Landfill, Phase 3 **Project No. G06096.6**

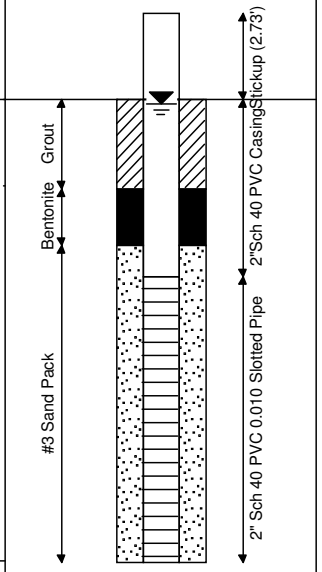
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA w/ S.S.
Logged by: J. Pfohl

Date started: 9/26/2006
Date ended: 9/26/2006
Completion depth: 16.17 ft
Stickup height: 2.73 ft

Surface elevation: 129.01 ft (MSL)
Top of pipe elevation: 131.74 ft (MSL)
Depth to water (TOB): 0.50 ft
Depth to water (24hrs): 0.17 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	6			Top Soil; black organic soil, root debris, "creek mud", wet
	27			Silty Sand; grey green, medium grained, wet
5				
	7			Silty Sand; very light grey to white, fine grained, saturated
10				
	3			Silty Sand; same as above, saturated
15				
				Boring terminated at 16.2 feet
20				
25				
30				
35				
40				
45				

Well Diagram



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LOG OF BORING: P3-18D

Wayne County Landfill, Phase 3 **Project No. G06096.6**

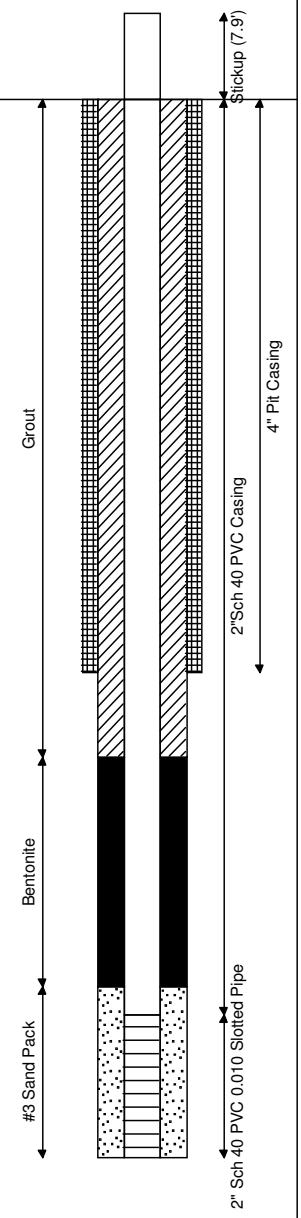
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5"OD HSA w/S.S.,3 7/8"mud tricone
Logged by: J. Pfohl

Date started: 9/28/2006
Date ended: 9/28/2006
Completion depth: 36.98 ft
Stickup height: 7.90 ft

Surface elevation: 128.89 ft (MSL)
Top of pipe elevation: 136.79 ft (MSL)
Depth to water (TOB): 0.50 ft
Depth to water (24hrs): -

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	6			Top Soil; black organic soil, root debris, "creek mud", wet
	27			Silty Sand; grey green, medium grained, wet
5				
	7			Silty Sand; very light grey to white, fine grained, saturated
10				
	3			Silty Sand; same as above, saturated
15				
	85			Clay with Sand; black, very cohesive, abundant lignitic wood, very stiff, "black creek formation"
20				
				extremely hard, black clay
25				
				softer drilling with depth, more grey sand and less clay
30				
35				
				Boring terminated at 37.0 feet
40				
45				

Well Diagram



Municipal Engineering Services Company, P.A.
Operation/Construction Managers Civil/Sanitary EngineersEnvironmental Studies
PO Box 97, Garner, North Carolina 27529 (919) 772-5393PO Box 349, Boone, North Carolina 28607 (828) 262-1767

LOG OF BORING: P3-19

Wayne County Landfill, Phase 3 **Project No. G06096.6**

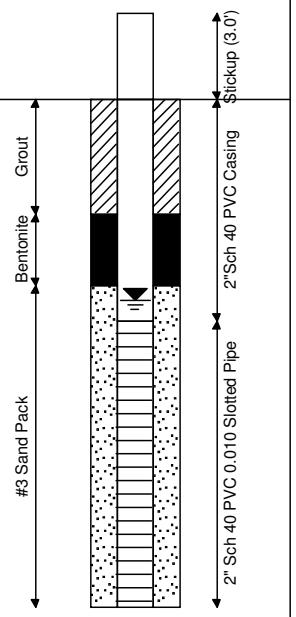
Drilling contractor: Derry's Well Drilling
Drill rig & method: 8.5" OD HSA
Logged by: J. Pfohl

Date started: 9/30/2006
Date ended: 9/30/2006
Completion depth: 17.74 ft
Stickup height: 3.00 ft

Surface elevation: 141.13 ft (MSL)
Top of pipe elevation: 144.13 ft (MSL)
Depth to water (TOB): 7.00 ft
Depth to water (24hrs): 7.01 ft

Depth (ft)	SPT (bpf)	Soil Type Symbol	Sample	Description of Material & Remarks
	13			Clayey Sand; orange, moist, medium dense with silt, fine grained
5	31			Clayey Sand; grades dense, increasing sand
10	10			Sand; tan and white, saturated, fine grained
15	28			Sand; grades orange, moderately dense, increasing silt
				Boring terminated at 17.7 feet
20				
25				
30				
35				
40				
45				

Well Diagram



Municipal Engineering Services Company, P.A.
Operation/Construction Managers Civil/Sanitary EngineersEnvironmental Studies
PO Box 97, Garner, North Carolina 27529 (919) 772-5393PO Box 349, Boone, North Carolina 28607 (828) 262-1767

P3-1

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/14/06

TIME COMPLETED 10:00 AM ☒ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☒ Slope ☒ Valley ■ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29629
LONGITUDE 78.06757

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 20.28

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ■

c. **WATER LEVEL** Below Top of Casing: 15.51 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 12.51 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 10.28	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 7	Ft.	Neat Cement	Tremie
From 7	To 9.25	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 10.28	To 20.28	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 9.25	To 20.28	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	4.5	Silty Clay w/ Sand; Pale Y Br
4.5	11	Clay; Dark Br
11	20.28	Silty Sand;Very Lt. Gray to White

11. REMARKS:

P3-1
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-2S

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/14/06

TIME COMPLETED 6:00 AM ☐ PM ■

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29706
LONGITUDE 78.06701

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 27.00

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 19.19 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): na **METHOD OF TEST** na

f. DISINFECTION: Type na **Amount** na

g. WATER ZONES (depth):

From 16.19 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 12	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 9	Ft.	Neat Cement	Tremie
From 9	To 11	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 12	To 27	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 11	To 27	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Sandy Clay; Mod. Y Br.
3	6.5	Sand; Gray O
6.5	8	Silty Clay w/ Sand; Lt. Gray
8	13	Clay; Fat
13	17	Silty Clay w/ Sand; Lt. Gray
17	27	Silty Sand;Very Lt. Gray to White

11. REMARKS:

P3-2S
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-2D

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/17/06

TIME COMPLETED 5:00 AM ☐ PM ■

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ■ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29706
LONGITUDE 78.06701

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 53.80

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ■

c. **WATER LEVEL** Below Top of Casing: 19.68 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 16.68 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 48.80	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 40	Ft.	Neat Cement	Tremie
From 40	To 47.75	Ft.	1/4" Bentonite Pellets	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 48.8	To 53.8	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 47.75	To 53.80	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Sandy Clay; Mod. Y Br.
3	6.5	Sand; Gray O
6.5	8	Silty Clay w/ Sand; Lt. Gray
8	13	Clay; Fat, Orange
13	17	Silty Clay w/ Sand; Lt. Gray
17	27	Silty Sand;Very Lt. Gray to White
17	53	Silty Sand;Very Lt. Gray to White
53	54	Sandy Clay; Dark Gray

11. REMARKS:

P3-2D

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-3

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle | NC | 28002
City or Town | State | Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☒ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/17/06

TIME COMPLETED 10:00 AM ☒ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☒ Slope ☒ Valley ☒ Flat ☐ Ridge ☒ Other
(check appropriate box)

LATITUDE 35.29690
LONGITUDE 78.06794

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 14.99

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 10.18 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): na **METHOD OF TEST** na

f. DISINFECTION: Type na **Amount** na

g. WATER ZONES (depth):
From 7.18 To >termination From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

From	To	Ft.	Diameter	Thickness/ Weight	Material
+3.00	4.99		2"	sch40	PVC

7. GROUT:

From	To	Ft.	Material	Method
0	2"		Neat Cement	Tremie
2"	4		3/8 Bentonite Pellets	Pour

8. SCREEN:

From	To	Ft.	Diameter	Slot Size	Material
4.99	14.99		2 in.	0.010 in.	PVC
			in.	in.	
			in.	in.	

9. SAND/GRAVEL PACK:

From	To	Ft.	Size	Material
4	14.99		#2	Filter Sand

10. DRILLING LOG

From	To	Formation Description
0	3	Silty Sand; Br.
3	8	Clayey Sand; Dark Y O
8	14.99	Silty Sand; Very Pale O

11. REMARKS:

P3-3

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt — 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-4

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/15/06

TIME COMPLETED 11:00 AM ☐ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ■ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29783
LONGITUDE 78.06784

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 14.83

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 7.38 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 4.38 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 4.83	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 2	Ft.	Neat Cement	Tremie
From 2	To 4	Ft.	1/4" Bentonite Pellets	Tremie
From 14.83	To 41.30	Ft.	Neat Cement	Tremie

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 4.83	To 14.83	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4	To 14.83	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Clayey Sand; Gray O
3	37	Silty Sand; Very Pale O to White
37	41	Silty Sand with Clay; medium to light grey
41	41.3	Sandy Clay; Dark Gray; Very Cohesive

11. REMARKS:

P3-4
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-5

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 10/1/06

TIME COMPLETED 4:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ■Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29865
LONGITUDE 78.06852

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■GPS ☐Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 15.70

b. **DOES WELL REPLACE EXISTING WELL?** YES ■ NO ☐

c. **WATER LEVEL** Below Top of Casing: 6.81 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.80 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From 4.01	To >termination	From	To
From	To	From	To
From	To	From	To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +2.80	To 5.70	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 2	Ft.	Neat Cement	Tremie
From 2	To 4	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 5.70	To 15.70	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4	To 15.70	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Sand; Tan, white, orange
3	7	Clayey Sand; tan
7	15.70	Sandy Clay; gray and red

11. REMARKS:

P3-5

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

Pulled & Overdrilled Old P-3 since it was damaged & lacked grout annulus. Descriptions from Cuttings.

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-6S

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/18/06

TIME COMPLETED 3:00 AM ☐ PM ■

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☒ Other
(check appropriate box)

LATITUDE 35.29841
LONGITUDE 78.06992

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 19.59

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 6.31 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 3.31 To >termination From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 9.59	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 6	Ft.	Neat Cement	Tremie
From 6	To 8.25	Ft.	3/8 Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 9.59	To 19.59	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 8.25	To 19.59	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Clayey Sand; light brown
3	19.59	Silty Sand; very light grey to white

11. REMARKS:

P3-6S

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-6D

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/19/06

TIME COMPLETED 12:00 AM ☐ PM ■

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ■Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29841
LONGITUDE 78.06992

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 37.04

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 7.13 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From 4.13	To >termination	From	To
From	To	From	To
From	To	From	To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 32.04	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 23	Ft.	Neat Cement	Tremie
From 23	To 31	Ft.	1/4" Bentonite Pellets	Tremie
From 37.04	To 37.75	Ft.	1/4" Bentonite Pellets	Tremie

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 32.04	To 37.04	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 31	To 37..04	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Clayey Sand; light brown
3	35.25	Silty Sand; very light grey to white
35.25	37.04	Silty Sand with Clay; medium to light grey
37.04	37.75	Clay; Black, cohesive

11. REMARKS:

P3-6D
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 3/9/07

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-7

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☒ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/19/06

TIME COMPLETED 12:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29909

LONGITUDE 78.06823

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 16.83

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 8.36 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From 5.36	To >termination	From	To
From	To	From	To
From	To	From	To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 6.83	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 2.5	Ft.	Neat Cement	Tremie
From 2.5	To 4.5	Ft.	3/8 Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 6.83	To 16.83	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4.5	To 16.83	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Sandy Clay; Mod Y Br
3	8	Sandy Silt;Gray O
8	16.83	Silty Sand; very light grey to white

11. REMARKS:

P3-7

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-8

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/18/06

TIME COMPLETED 5:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35 29856
LONGITUDE 78 07004

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 15.54

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 5.39 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): na **METHOD OF TEST** na

f. DISINFECTION: Type na **Amount** na

g. WATER ZONES (depth):
From 2.39 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 5.54	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 2.25	Ft.	Neat Cement	Tremie
From 2.25	To 4.25	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 5.54	To 15.54	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4.25	To 15.54	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	15.54	Silty Sand: Mod. Y Br. Lighter w/ depth

11. REMARKS:

P3-8

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR 3/9/07 DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-9

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/18/06

TIME COMPLETED 8:00 AM ☒ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☒ Slope ☒ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29921
LONGITUDE 78.06923

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 15.67

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 4.38 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 1.38 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 5.67	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 2.5	Ft.	Neat Cement	Tremie
From 2.5	To 4.5	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 5.67	To 15.67	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4.5	To 15.67	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	8	Sandy Clay; Dark Y O
8	15.67	Silty Sand; Very Pale O

11. REMARKS:

P3-9
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-10S

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9//1106

TIME COMPLETED 11:00 AM ☒ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☒ Slope ☒ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29950
LONGITUDE 78.06857

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 16.12

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 7.37 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 4.37 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 6.12	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 3.15	Ft.	Neat Cement	Tremie
From 3.15	To 5.15	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 6.12	To 16.12	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 5.15	To 16.12	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Clayey Sand; Mod. Y. Br.
3	13	Sandy Clay; Mod. Y. Br.
13	16.12	Silty Sand; Very Pale O.

11. REMARKS:

P3-10S

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-10D

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle | NC | 28002
City or Town | State | Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9//27/06

TIME COMPLETED 4:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29950
LONGITUDE 78.06858

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 39.19

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 8.01 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 5.01 To >termination From To
From To From To
From To From To

6. CASING:

Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 29.19 Ft.	2"	sch40	PVC
From	To Ft.			
From	To Ft.			

7. GROUT:

Depth		Material	Method
From 0	To 20 Ft.	Neat Cement	Tremie
From 20	To 28 Ft.	1/4" Bentonite Pellets	Tremie
From	To Ft.		

8. SCREEN:

Depth		Diameter	Slot Size	Material
From 29.19	To 39.19 Ft.	2 in.	0.010 in.	PVC
From	To Ft.	in.	in.	
From	To Ft.	in.	in.	

9. SAND/GRAVEL PACK:

Depth		Size	Material
From 28	To 39.19 Ft.	#2	Filter Sand
From	To Ft.		
From	To Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Clayey Sand; Mod. Y. Br.
3	13	Sandy Clay; Mod. Y. Br.
13	39.19	Silty Sand; Very Pale O.
39.19		Hard Black Clay

11. REMARKS:

P3-10D

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 3/9/07

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-11S

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/25/06

TIME COMPLETED 3:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35 29.77
LONGITUDE 78 06.56

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 17.03

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 5.33 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From	To	From	To
2.33	>termination		

6. CASING:

From	To	Ft.	Diameter	Thickness/ Weight	Material
+3.00	7.03		2"	sch40	PVC

7. GROUT:

From	To	Ft.	Material	Method
0	4		Neat Cement	Tremie
4	6		3/8" Bentonite Pellets	Pour

8. SCREEN:

From	To	Ft.	Diameter	Slot Size	Material
7.03	17.03		2 in.	0.010 in.	PVC
			in.	in.	
			in.	in.	

9. SAND/GRAVEL PACK:

From	To	Ft.	Size	Material
6	17.03		#2	Filter Sand

10. DRILLING LOG

From	To	Formation Description
0	17.03	Silty Sand; Dark Y. Orange Lighter w/ Depth

11. REMARKS:

P3-11S

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-11D

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9//11/06

TIME COMPLETED 3:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ■ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35 29976
LONGITUDE 78.06956

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 33.42

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 6.01 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 3.01 To >termination From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 33.42	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 25	Ft.	Neat Cement	Tremie
From 25	To 32.5	Ft.	1/4" Bentonite Pellets	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 33.42	To 38.42	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 32.5	To 38.42	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	38.42	Silty Sand; Dark Y. Orange Lighter w/ Depth
38.42		Hard Black Clay

11. REMARKS:

P3-11D

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-12

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/27/06

TIME COMPLETED 4:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ■Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29960

LONGITUDE 78.07139

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 18.18

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 4.53 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From 1.53 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 8.18	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 5	Ft.	Neat Cement	Tremie
From 5	To 7	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 8.18	To 18.18	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 7	To 18.18	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	18.18	Silty Sand; Grayish Orange Lighter w/ Depth

11. REMARKS:

P3-12

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-13

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle | NC | 28002
City or Town | State | Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation ☐ Other ☒ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/26/06

TIME COMPLETED 1:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.299601
LONGITUDE 78.070448

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 14.45

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 4.85 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From 1.85	To >termination	From	To
From	To	From	To
From	To	From	To

6. CASING:

Depth From	To	Diameter	Thickness/ Weight	Material
+3.00	4.45	2"	sch40	PVC

7. GROUT:

Depth From	To	Material	Method
0	2	Neat Cement	Tremie
2	4	3/8" Bentonite Pellets	Pour
14.45	28.5	Neat Cement	Tremie

8. SCREEN:

Depth From	To	Diameter	Slot Size	Material
4.45	14.45	2 in.	0.010 in.	PVC
		in.	in.	
		in.	in.	

9. SAND/GRAVEL PACK:

Depth From	To	Size	Material
4	14.45	#2	Filter Sand

10. DRILLING LOG

From	To	Formation Description
0	28.50	Silty Sand; Brown to Grayish Orange
28.50		Hard dark gray clay

11. REMARKS:

P3-13
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 3/9/07

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-14

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☒ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/19/06

TIME COMPLETED 4:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28356
LONGITUDE 78.07085

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 21.56

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 14.45 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From 11.45	To >termination	From	To
From	To	From	To
From	To	From	To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 6.56	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 3.5	Ft.	Neat Cement	Tremie
From 3.5	To 5.5	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 6.56	To 21.56	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 5.5	To 21.56	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	8	Sandy Clay; Light Brown
8	21.56	Silty Sand; Grayish Orange

11. REMARKS:

P3-14

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-15S

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☒ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/21/06

TIME COMPLETED 4:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28386

LONGITUDE 78.07003

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 16.53

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 10.01 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): na **METHOD OF TEST** na

f. DISINFECTION: Type na **Amount** na

g. WATER ZONES (depth):

From 7.01 To >termination From To
From To From To
From To From To

6. CASING:

From	To	Ft.	Diameter	Thickness/ Weight	Material
+3.00	6.53		2"	sch40	PVC

7. GROUT:

From	To	Ft.	Material	Method
0	3.5		Neat Cement	Tremie
3.5	5.5		3/8" Bentonite Pellets	Pour

8. SCREEN:

From	To	Ft.	Diameter in.	Slot Size in.	Material
6.53	16.53		2	0.010	PVC

9. SAND/GRAVEL PACK:

From	To	Ft.	Size	Material
5.5	16.53		#2	Filter Sand

10. DRILLING LOG

From	To	Formation Description
0	3	Silty Sand; Y. Brown
3	8	Sandy Clay; Grayish Orange Lighter w/ depth
8	16.53	Silty Sand w/ clay;Mod. Light Gray

11. REMARKS:

P3-15S

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-15D

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/22/06

TIME COMPLETED 9:00 AM ☒ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☒ Slope ☒ Valley ■ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28387
LONGITUDE 78.07003

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■ GPS ☐ Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 34.49

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 9.86 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 6.86 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 24.49	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 16	Ft.	Neat Cement	Tremie
From 16	To 23.5	Ft.	1/4" Bentonite Pellets	Tremie
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 24.49	To 34.49	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 23.5	To 34.49	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Silty Sand; Y. Brown
3	8	Sandy Clay; Grayish Orange Lighter w/ depth
8	34.49	Silty Sand w/ clay;Mod. Light Gray

11. REMARKS:

P3-15D
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-16

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/21/06

TIME COMPLETED 7:00 AM ☐ PM ■

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ■Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 35.29981
LONGITUDE 78.07284

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ■GPS ☐Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 21.24

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: 8.61 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):
From 5.61 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 6.24	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 3.25	Ft.	Neat Cement	Tremie
From 3.25	To 5.25	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 6.24	To 21.24	Ft.	2 in.	0.010 in.	PVC
From	To	Ft.	in.	in.	
From	To	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 5.25	To 21.24	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	3	Silty Sand; Brown
3	12	Sandy Clay; Mod. Y. Br.
12	18	Clayey Sand; Mod. Y. Br.
18	21.24	Silty Sand w/ clay;Grayish Blue

11. REMARKS:

P3-16

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-17

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/25/06

TIME COMPLETED 10:00 AM ■ PM ☐

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐Slope ☐Valley ☒Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28390

LONGITUDE 78.02707

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 21.05

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 8.38 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): na **METHOD OF TEST** na

f. DISINFECTION: Type na **Amount** na

g. WATER ZONES (depth):

From 5.38 To >termination From To
From To From To
From To From To

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 6.05	Ft.	2"	sch40	PVC
From	To	Ft.			
From	To	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 2.5	Ft.	Neat Cement	Tremie
From 2.5	To 4.5	Ft.	3/8" Bentonite Pellets	Pour
From	To	Ft.		

8. SCREEN:

	Depth		Diameter		Slot Size		Material
From 6.05	To 21.05	Ft.	2	in.	0.010	in.	PVC
From	To	Ft.		in.		in.	
From	To	Ft.		in.		in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4.5	To 21.05	Ft.	#2	Filter Sand
From	To	Ft.		
From	To	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	7	Sandy Clay; Light Brown Mottled
7	21.05	Silty Sand; Grayish Orange Lighter w/ Depth

11. REMARKS:

P3-17

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-18S

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle | NC | 28002
City or Town | State | Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation☐ Other ☒ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/26/06

TIME COMPLETED 7:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28390

LONGITUDE 78.07274

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 16.17

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 2.90 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): na **METHOD OF TEST** na

f. DISINFECTION: Type na **Amount** na

g. WATER ZONES (depth):

From +.10' To >termination From ____ To ____
From ____ To ____ From ____ To ____
From ____ To ____ From ____ To ____

6. CASING:

	Depth		Diameter	Thickness/ Weight	Material
From +3.00	To 6.17	Ft.	2"	sch40	PVC
From ____	To ____	Ft.			
From ____	To ____	Ft.			

7. GROUT:

	Depth		Material	Method
From 0	To 3.1	Ft.	Neat Cement	Tremie
From 3.1	To 5.1	Ft.	3/8" Bentonite Pellets	Pour
From ____	To ____	Ft.		

8. SCREEN:

	Depth		Diameter	Slot Size	Material
From 6.17	To 16.17	Ft.	2 in.	0.010 in.	PVC
From ____	To ____	Ft.	in.	in.	
From ____	To ____	Ft.	in.	in.	

9. SAND/GRAVEL PACK:

	Depth		Size	Material
From 5.1	To 16.17	Ft.	#2	Filter Sand
From ____	To ____	Ft.		
From ____	To ____	Ft.		

10. DRILLING LOG

From	To	Formation Description
0	7	Top Soil; Black
7	16.17	Silty Sand; Light Green lighter w/ depth to white

11. REMARKS:

P3-18S

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

Artesian (Very low lying area)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 3/9/07

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-18D

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle NC 28002
City or Town State Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/28/06

TIME COMPLETED 12:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:
☐Slope ☐Valley ■Flat ☐Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28389
LONGITUDE 78.07273

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒GPS ☐Topographic map
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley NC 28333
City or Town State Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 36.98

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒

c. **WATER LEVEL** Below Top of Casing: Artesian FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 8.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From Artesian	To >termination	From	To
From	To	From	To
From	To	From	To

6. CASING:

Depth		Diameter	Thickness/ Weight	Material
From +8.00	To 31.98	Ft. 2"	sch40	PVC
From 0	To 20	Ft. 4"	sch40	PVC
From	To	Ft.		

7. GROUT:

Depth		Material	Method
From 0	To 23	Ft. Neat Cement	Tremie
From 23	To 31	Ft. 1/4" Bentonite Pellets	Tremie
From	To	Ft.	

8. SCREEN:

Depth		Diameter	Slot Size	Material
From 31.98	To 36.98	Ft. 2 in.	0.010 in.	PVC
From	To	Ft. in.	in.	
From	To	Ft. in.	in.	

9. SAND/GRAVEL PACK:

Depth		Size	Material
From 31	To 36.98	Ft. #2	Filter Sand
From	To	Ft.	
From	To	Ft.	

10. DRILLING LOG

From	To	Formation Description
0	7	Top Soil; Black
7	16.17	Silty Sand; Light Green lighter w/ depth to white
16.17	23	Clay w/ Sand; Black cohesive hardest at ~23'
23	36.98	Sandy Clay; Gray softer w/ depth

11. REMARKS:

P3-18D
Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill
Very Artesian (Very low lying area), Type III Monitoring well Design

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt 3/9/07
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Derry L. Huneycutt
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

P3-19

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2663

1. WELL CONTRACTOR:

Derry Huneycutt
Well Contractor (Individual) Name

Derry's Well Drilling
Well Contractor Company Name

STREET ADDRESS 44283-A NC 24/27/73

Albemarle | NC | 28002
City or Town | State | Zip Code

(704)- 982-3070
Area code- Phone number

2. WELL INFORMATION:

SITE WELL ID #(if applicable)

STATE WELL PERMIT#(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring ☐ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ■ (list use) Temp. piezometer for hydro. study

DATE DRILLED 9/30/06

TIME COMPLETED 9:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Dudley COUNTY Wayne

460B South Landfill Road
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other
(check appropriate box)

LATITUDE 35.28390

LONGITUDE 78.07207

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY- is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Wayne Co. Subtitle D Lined Landfill

STREET ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

CONTACT PERSON Mr. Lloyd Cook

MAILING ADDRESS 460B South Landfill Road

Dudley | NC | 28333
City or Town | State | Zip Code

(919)- 689-2994
Area code - Phone number

5. WELL DETAILS:

a. **TOTAL DEPTH:** 17.74

b. **DOES WELL REPLACE EXISTING WELL?** YES ☒ NO ☐

c. **WATER LEVEL** Below Top of Casing: 10.01 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.00 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** na **METHOD OF TEST** na

f. **DISINFECTION: Type** na **Amount** na

g. **WATER ZONES** (depth):

From	To	From	To
7.01	>termination		

6. CASING:

From	To	Ft.	Diameter	Thickness/ Weight	Material
+3.00	7.74		2"	sch40	PVC

7. GROUT:

From	To	Ft.	Material	Method
0	4		Neat Cement	Tremie
4	6		3/8" Bentonite Pellets	Pour

8. SCREEN:

From	To	Ft.	Diameter	Slot Size	Material
7.74	17.74		2 in.	0.010 in.	PVC
			in.	in.	
			in.	in.	

9. SAND/GRAVEL PACK:

From	To	Ft.	Size	Material
6.5	17.74		#2	Filter Sand

10. DRILLING LOG

From	To	Formation Description
0	9	Clayey Sand; Orange
9	17.74	Sand; Tan, white, orange

11. REMARKS:

P3-19

Temporary piezometer for hydrogeological study for the Phase 3 Lined Landfill

Pulled & Overdrilled Old P-6 since it lacked grout annulus. Descriptions from Cuttings.

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Derry L. Huneycutt — 3/9/07

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE

Derry L. Huneycutt

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center – Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b
Rev. 7/05

LOG OF BORING NO. P3-1

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" O.D. HSA w/ S.S Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	3-3-5	(8)	0-1.5	X	Silty Clay w/ Sand; Pale Y. Br. mottled w/ Black top soil, fine root debris, moist	
	3-10-15	(25)	3-4.5	X	Silty Clay w/ Sand; Pale Y. Br.; mottled, relict structure, root debris,	
5					4.5' Fat clay Begins	4.5- Clay "Fat"
	3-10-14	(24)	8-9.5	X	Clay; Dark Brown, Lt. Gray & YR mottled, Fat, cohesive, moist,	
10					11' White sand Begins	
			13-14.5			
	3-3-3	(6)		X	Silty Sand; Very Lt. Gray to White; fine grained, very loose, wet	▽ WD= ~10' BGS
15						
			18-19.5			
	3-3-4	(7)		X	Silty Sand; Same as above; saturated.	
20					Terminated @ 20.28' BGS	
25						
30						
35						
40						

Completion Depth 20.28 BGS Depth to Water in Boring 15.51 BTOP ☐ Set ☑ 24 Hrs

Date 9/14/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-2S

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA [redacted] Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
			0-1.5	X		
5					See Log for P3-2D for Soil Descriptions	
						∇ WD ~ 17' BGS
10						
15						
20						
25						
				—	Terminated @ 27.00' BGS	
30						
35						
40						

Completion Depth 27.00 BGS Depth to Water in Boring 19.19 BTOP ☐ Set ☑ 24 Hrs

Date 9/14/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-2D

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w/ SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-6-7	(13)	0-1.5	X	Sandy Clay; Moderate YBr clay w/ Moderate grained Pale Brown & Grayish Mottled, damp	Orange sand.
3	3-3-3	(6)	3-4.5	X	Sand; Grayish Orange; medium grained, damp.	
5						
	6-12-16	(28)	6.5-8	X	Silty Clay w/ sand; Lt. Gray w/ YR mottles, very fine sand, cohesive moist.	▽ WD: ~17' BGS
			8.9-18		Fat Clay;	
10						
	9-13-15	(28)	13-14.5	X	Silty Clay w/ sand; Lt. Gray w/ Y.R Mottles, very fine grained sand, cohesive, moist.	
15					Silty Sand starts ~17'	
	2-2-3	(5)	18-19.5	X	Silty Sand; Very Lt. Gray to white, fine grained, very loose wet.	
20						
	3-3-3	(6)	23-24.5	X	Silty Sand; Same as above	
25						
			28-29.5	X	Silty Sand; Same as above	
30	2-3-3	(6)				
	2-2-2	(4)	33-34.5	X	Silty Sand; Very Lt. Gray to white, fine grained, very loose, trace clay nodules, wet.	
35						
	2-3-3	(6)	38-39.5	X	Silty Sand; Very Lt. Gray to white, fine grained, very loose saturated.	
40						

Completion Depth 53.8' BGS Depth to Water in Boring 19.68 BTOP ☐ Set ☑ 24 Hrs

Date 9/29/06 Field Agent J. Pfohl

1 of 2

LOG OF BORING NO. P3-2D

Project: Wayne Co. LF, ph. 3 Project No.: 606096.0

Type: 8.5" OD HSA w/ SS Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	3-4-4	(8)	43-44.5	X	Silty Sand; Same as above	
45						
	3-5-5	(10)	48-49.5	X	Silty Sand; Same as above	
50					51' Gray Silty Sand	
	6-46		53-54'	X	Sandy Clay; Dark Gray cohesive, fine to Medium grained, very bottom was black, cohesive, ligna	
					Terminated @ 53.8' BGS. Hard Black Clay "Black Creek Formation"	
55						Didn't complete 3rd portion of SS in @ 53' since didn't want to penetrate confining layer.
60						
65						
70						
75						
80						

Completion Depth 53.8 BGS Depth to Water in Boring 19.68 BTOP ☐ Set ☑ 24 Hrs

Date 9/29/06 Field Agent J. Pfohl

2 of 2

LOG OF BORING NO. P3-3

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w/SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	1-1-1	3	0-1.5	X	Silty Sand; Brown medium grained sand w/ some clay, fine root debris, moist.	
	3-5-6	(11)	3-4.5	X	Clayey Sand; Dark Yellowish orange, poorly sorted fine to medium grained; trace Lt. gray clay nodules, slightly plastic, moist.	▽ ~6.5' BGS WD
5						
	5-6-7	(13)	8-9.5	X	Silty Sand; Pale Y. Orange, poorly graded fine to medium grained, wet.	6' Lt. Brown Sand
10						11' white sand streaks
					11' Lighter silty Sand streaks	
			13-14.50	X	Silty Sand; Very Pale Orange, fine grained, loose, saturated.	
	2-2-2	(4)			Terminated @ 14.99' BGS	
15						
20						
25						
30						
35						
40						

Completion Depth 14.99 BGS Depth to Water in Boring 10.18 BTOP ☐ Set ☑ 24 Hrs

Date 9/17/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-4

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" O.D HSA w/ S.S Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-1-2	(3)	0-1.5	X	Clayey Sand; Grayish Orange w/ Dark Y. Orange & gray mottles, poorly sorted fine to Medium grained, cohesive, moist, root debris, Top soil top 0.5'.	
			3-4.5			
	7-7-5	(12)		X	Silty Sand; Grayish Orange w/ gray & Dark Y. mottles, trace clay nodules, fine grained, moist	
5						
	6-7-8	(15)	6.5-8	X	Silty Sand; Light Brown	
8			ST 8-9.38	■	Silty Sand	
10						▽ WD = ~4' BGS
	5-1-3	(4)	13-14.5	X	Silty Sand; Very Pale Orange, fine grained, poorly sorted, loose, saturated.	
15					Piezometer Set @ 14.83' BGS	
	3-2-3	(5)	18-19.5	X	Silty Sand; Same as above	
20						
	3-3-3	(6)	23-24.5	X	Silty Sand; Very Pale orange to white, fine grained, poorly sorted, loose, saturated.	
25						
30	2-2-3	(5)	28-29.5	X	Silty Sand; Same as above	
35	3-2-2	(4)	33-34.5	X	Silty Sand; Same as above	Very obvious hard spot @ 41.30' BGS
	4-8-8	(16)	38-39.5		Silty Sand w/ clay; Med. Lt. Gray, black clay nodules, moist	
	28-50/4"		41-41.30			
40					41.30 Terminated cond Black confining layer Black Creek formation	

Bailing from 4.30' to 14.83' prior to Piez. Set

Completion Depth ~~[illegible]~~ 14.83 Piez. 41.30 Drilled BGS Depth to Water in Boring 7.38 BTOP ☐ Set ☑ 24 Hrs

Date 9/15/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-5

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
					Location surveyed @ P-3A Location which was installed for the original site study but backed grout anyulus & was destroyed. Since in proposed footprint rather than overdrill & abandon decided to install new P3-5 in same location. Found PVC when drilling commenced so pulled out. P-3A was installed to 15'BGS from original Ground surface 163.0' which was much higher than existing conditions therefore the entire depth was over drilled.	▽ ~4' WD
					See Boring Log for P-3A for Soil Descriptions.	
					Terminated @ 15.7' BGS	

Completion Depth 15.7 BGS Depth to Water in Boring 6.81 BTOP ☐ Set ☑ 24 Hrs

Date 10/1/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-6S

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
					See Log for P3-6D for Soil Descriptions	
5						
						∇ ~3.5' BGS WD
10						
15						
20					Terminated @ 19.59' BGS	
25						
30						
35						
40						

Completion Depth 19.59 BGS Depth to Water in Boring 6.31 BTOP ☐ Set ☑ 24 Hrs

Date 9/18/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-6D

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5 OD HSA w/ SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	5-7-8	(15)	0-1.5	X	Clayey Sand; Lt. Brown medium grained sand interlayered w/grayish orange cohesive clay, fine root debris, slightly micas., moist.	
5	3-3-6	(9)	3-4.5	X	Silty Sand w/ Clay; Moderate Orange pink fine grained sand w/grayish orange mottled clay. Moist.	▽ ~3.5' BGSWD
10	2-2-4	(6)	8-9.5	X	Silty Sand; Very light gray to white poorly sorted, few mottled clay nodules, wet.	12.5' white to Orange
15	5-8-8	(16)	13-14.5	X	Silty Sand; Grayish Orange, fine grained, relict structure, slightly micas., moist	
20	2-2-3	(5)	18-19.5	X	Silty Sand; Grayish orange, fine grained, slightly micas., loose, saturated.	
25	3-3-5	(8)	23-24.5	X	Silty Sand; Same as above	
30	3-4-4	(8)	28-29.5	X	Silty Sand; Grayish orange fine Grained sand w/ very pale orange silt interlayered, slightly micas., saturated.	
35	3-3-3	(6)	33-34.5	X	Silty Sand; Same as above, saturated	
					35.25' 37.04' Silty Sand w/ clay; Med. Lt. Gray, black clay nodules	Placed Bentonite Pellets last Portion prior to Setting Piez. Since felt might have went into the clay ~6".
			3		Piezometer set @ 37.04.	
					37.04' Much Harder Black Creek formation	
40					37.75 Terminated Boring Much harder Black clay.	

Completion Depth 37.75 Drilled 37.04 Piez. BGS Depth to Water in Boring 7.13 BTOP ☐ Set ☑ 24 Hrs

Date 9/27/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-7

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w/ SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-4-6	(10)	0-1.5	X	Sandy Clay; Mod. Y br. & very pale orange mottled clay w/ fine to medium grind sand, few fine root fragments, cohesive, moist.	
5	3-3-5	(8)	3-4.5	X	Sandy Silt; Grayish orange silt interlayered w/ fine grained very pale orange sand, few mottled clay nodules, moist.	
						▽ ~5' BGS WD
	3-3-3	(6)	8-9.5	X	Silty Sand; Very light gray to white poorly graded, very loose, wet.	5.5' orange to white
10						
	3-3-3	(6)	13-14.5	X	Silty Sand; Same as above, saturated.	
15						
					Terminated @ 16.83' BGS	
20						
25						
30						
35						
40						

Completion Depth 16.83' BGS Depth to Water in Boring 8.36 BTOP ☐ Set ☑ 24 Hrs

Date 9/19/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-8

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Retr.	Description of Material	Comments
	2-1-1	(2)	0-1.5	X	Silty Sand; Mod. Y. Brown, Medium grained, trace dark gray organic top soil w/ roots, few cohesive clay nodules, moist	
	7-6-6	(12)	3-4.5	X	Silty Sand; Mod. Reddish Orange interlayered w/ fine grained y. orange trace mottled cohesive clay nodules, wet.	▽ ~2' WD BGS 3' Y Br. to R. Orange
5						
	2-2-1	(3)	8-9.5	X	Silty Sand; Grayish Orange fine to med. grained, very loose,	saturated
10						
	2-1-2	(3)	13-14.5	X	Silty Sand; Very Pale orange, fine to Med. grained, very loose, saturated	
15					Terminated @ 15.54' BGS	
20						
25						
30						
35						
40						

Completion Depth 15.54 BGS Depth to Water in Boring 5.39 BTOP ☐ Set ▨ 24 Hrs

Date 9/18/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-9

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w/ CS Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-2-2	(4)	0-1.5	X	Sandy Clay; Dark Y. Orange & very pale Orange mottled, cohesive, Sand fine grained, loose, moist	▽ ~1' BGS
5	2-3-4	(7)	3-4.5	X	Sandy Clay; Dark Y. orange, cohesive, higher fine grained sand component than above, moist.	
						6' clay to Sand
10	2-2-2	(4)	8-9.5	X	Silty Sand; Very Pale orange fine grained sand; loose, Saturated	
15	2-2-3	(5)	13-14.5	X	Silty Sand; Same as above	
					Terminated @ 15.54' BGS	
20						
25						
30						
35						
40						

Completion Depth 15.54' BGS Depth to Water in Boring 4.38 BTOP ☐ Set ☑ 24 Hrs

Date 9/18/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-10s

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
5					See Log for Adjacent P3-10D for Soil Descriptions	
						∇~4' BGS
10						
15						
					Terminated @ 16.12' BGS	
20						
25						
30						
35						
40						

Completion Depth 16.12 BGS Depth to Water in Boring 7.37 BTOP ☐ Set ☑ 24 Hrs

Date 9/11/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-10D

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w/ SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Retr.	Description of Material	Comments
	1-1-2	(3)	0-1.5	X	Clayey Sand; Mod. Y Br. medium grained sand w/ Pale Y. Br. & Light Brown mottled clay nodules. few fine roots, relict structure, loose, moist	
5	2-2-2	(4)	3-4.5	X	Sandy Clay; Mod. Y Br. & very Pale orange mottled, cohesive, sand fine grained, few root fragments, moist.	
						▽~4' BGS WD
10	2-4-4	(8)	8-9.5	X	Sandy Clay; Mod. Y Br. & very Pale orange mottled, very cohesive, sand fine grained, moist	10' clay to Sand
15	2-3-4	(7)	13-14.5	X	Silty Sand; Very pale orange fine grained sand, wet.	
20	2-2-3	(5)	18-19.5	X	Silty Sand w/ clay; Very pale orange fine grained sand, w/ Mod. Y Br. & v. Pale orange mottled clay nodules, wet.	
25	3-5-7	(12)	23-24.5	X	Silty Sand; very pale orange fine grained sand, saturated	
30	4-6-7	(13	28-29.5	X	Silty Sand; Same as above	
35	5-5-6	(11)	33-34.5	X	Silty Sand; Same as above	
					Silty Sand w/ clay; Med. Lt. Gray, Black clay nodules. 36-39.19	
40					Terminated @ 39.19' BGS Much harder Black clay	

Completion Depth 39.19' BGS Depth to Water in Boring 8.01 BTOP ☐ Set ☑ 24 Hrs

Date 9/27/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-11S

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, Drilling Company: Deiry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
5					See Log for adjacent P3-11D for Soil Descriptions	▽~7' BGS WD
15					Terminated @ 17.03' BGS	

Completion Depth 17.03 BGS Depth to Water in Boring 9.86 BTOP ☐ Set ☑ 24 Hrs

Date 9/25/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-11D

Project: Wayne Co. LF, ph. 3 | Project No.: G06096.0

Type: 8.5" OD HSA w/ss | Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Installed even though Not on original Boring Plan. GPS coordinates not correct & thought location was P3-15D until after installation.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-2-3	(5)	0-1.5	X	Silty Sand; Dark Yellowish Orange, Trace clay, moist	
	2-2-2	(4)	3-4.5	X	Silty Sand; Same as above	▽ WD ~ 2' BGS
5						
	3-5-7	(12)	8-9.5	X	Silty Sand Grayish Orange fine to med. grained, No defined structure, No clay fraction, moist.	
10						
	3-3-4	(7)	13-14.5	X	Silty Sand; Same as above	
15						
			18-19.5	X	Silty Sand; Same as above but saturated	
20	2-3-4	(7)				
			23-24.5	X	Silty Sand; Grayish orange; fine to med grained, No relict structure, saturated, loose	
25	~~8/16/71~~ 2-2-1	~~(120)~~ (3)				
			28-29.5	X	Silty Sand; Grayish Orange; Fine to med. Grained, No relict structure, saturated	
30	5-5-6	(11)			30' Gray Silty Sand w/ clay Begins Harder Drilling	30' White to Gray
				X	Silty Sand w/ Clay; Med. Lt. Gray, Black clay nodules, moist,	
35	6-10-16	(26)	33-34.5		Harder Drilling 35' Gray to black clay	35' slightly Harder Gray clayey Sand Could be construed as clay
			36-37		Terminated @ 38.42 much harder "Confining Layer"	Bottom ~3' of Lead Auger Black clay.
40						

Completion Depth 38.42 BGS | Depth to Water in Boring 6.01 BTOP ☐ Set ☑ 24 Hrs

Date 9/11/06 | Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-12

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w SS Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	3-3-3	(6)	0-1.5	X	Silty Sand; Grayish orange poorly graded fine to medium grained trace root fragments, moist.	
5	3-7-8	(15)	3-4.5	X	Silty Sand; Mod. Brown, medium grained, few round gravel size rock fragments, moist.	
10	3-3-4	(7)	8-9.5	X	Silty Sand; Grayish orange fine grained sand w/ laminated very pale orange silt, wet.	
						White Sand Begins 12'
15	2-2-1	(3)	13-14.5	X	Silty Sand; Very light gray to white poorly graded fine grained, loose, saturated.	
					Terminated @ 18.18' BGS	
20						
25						
30						
35						
40						

Completion Depth 18.18 BGS Depth to Water in Boring 4.53 BTOP ☐ Set ☑ 24 Hrs

Date 9/27/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-13

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" HSA w/ SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	3-4-4	(8)	0-1.5	X	Silty Sand; Grayish orange fine to Med. Grained, trace root fragments, trace black organic silt particles, poorly graded, moist	
	2-3-4	(7)	3-4.5	X	Silty Sand; Same as above	
5						
	2-1-2	(3)	8-9.5	X	Silty Sand; Grayish orange fine grained, poorly graded, very loose, wet.	
10						12' orange to white Sand
	2-2-1	(3)	13-14.5	X	Silty Sand; Very light gray to white fine grained, poorly sorted, loose, saturated	
15					Set Piez. 14.45' BGS	
					Tremie Grouted Bent. Grout while drilling HSA	
				X	Silty Sand; No Recovery Sample came out too saturated.	
20	1-1-1	(2)	18-19.5			~19' White to Lt Gray Sand
			23-24.5	X	Silty Sand; Grayish Blue green poorly graded, fine to med. grained, saturated	
25	2-2-3	(5)			~25' harder drilling more clay Silty Sand w/ clay	~25' Gray Sand to Silty Sand w/ clay
			28.5, 30.5		Terminated Boring @ 28.5' BGS much harder (confining layer @ 28.5' BGS) Silty Sand; Dark gray	
30						
35						
40						

Completion Depth Drilled 28.5' Set 14.45' BGS Depth to Water in Boring 4.85 BTOP ☐ Set ☑ 24 Hrs

Date 9/26/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-14

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA w SS Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. | Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-3-4	(7)	0-1.5	X	Sandy Clay; Lt. Brown w Dark Yellowish orange mottles, trace ~~[illegible]~~ fine grained sand, very cohesive, ~~moist~~ Root debris, moist	
			3-4.5			
	7-9-20	(29)		X	Sandy Clay; Lt. Brown, trace fine grained sand, more stiff, very cohesive, moist	
5					silty sand starts @ 6'	
						6' clay to SS
	6-6-5	(11)	8-9.5	X	Silty Sand; Grayish orange fine grained sand laminated w/ very pale orange silt, trace clay, moist.	
10						▽ WD = ~11.5' BGS
	6-4-6	(10)	13-14.5	X	Silty Sand; Same as above but no clay portion	
15						
	3-3-3	(6)	18-19.5	X	Silty Sand; Grayish orange fine grained sand laminated w/ very pale orange silt; loose, saturated.	
20						20' Grayish orange to white Silty Sand
					Terminated @ 21.56' BGS	
25						
30						
35						
40						

Completion Depth 21.56' BGS Depth to Water in Boring 19.45 BTOP ☐ Set ▨ 24 Hrs

Date 9/19/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-15S

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.5" OD HSA Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. | Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
					See Log for adjacent P3-15D for Soil Descriptions	
5						
10						▽WD ~7' BGS
15						
					Terminated @ 16.53' BGS	
20						
25						
30						
35						
40						

Completion Depth 16.53 BGS Depth to Water in Boring 10.01 BTOP ☐ Set ☑ 24 Hrs

Date 9/21/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-15D

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, w/SS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	3-3-3	(6)	0-1.5	X	Silty Sand w/clay; Dusky Y. Br., Medium Grained sand w/organic Top soil, root debris, ~~moist~~ Trace Grayish orange clay, moist	
5	4-11-13	(24)	3-4.5	X	Sandy Clay; Mod. Y. Brown, Med. Grained sand laminated w/ colostive clay, moist.	▽ ~7' BGS W.D
10	8-12-10	(22)	8-9.5	X	Silty Sand; Grayish orange medium to Course grained, trace micas, moist.	
12						12' Brown to White
15	3-3-3	(6)	13-14.5	X	Silty Sand; Very light gray to white fine to med. grained, loose, moist	
20	3-3-2	(5)	18-19.5	X	Silty Sand; Same as above.	
25	2-2-1	(3)	23-24.5	X	Silty Sand; Very light Gray to white fine to Med. grained, loose, saturated	
30	2-2-2	(4)	28-29.5	X	Silty Sand; Same as above	
35	6-12-13	(25)	33-34.5	X	Silty Sand w/ clay; Mod. Lt. Gray, Black clay nodules, moist Terminated @ 34.49' BGS	Terminated @ 34.49' felt getting very close to confining layer due to SS & Blow counts.
40						

Completion Depth 34.49 BGS Depth to Water in Boring 9.86 BTOP ☐ Set ☑ 24 Hrs

Date 9/22/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-16

Project: Wayne Co. LF, ph. 3 Project No.: G06096.0

Type: 8.25" O.D HSA w/ SCS Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
					Silty Sand;	
	2-2-2	(4)	0-1.5	X	~~Sandy Silt~~; Brown, Medium grained, Top soil 0-0.25' Black w/ root debris	
	3-4-7	(11)	3-4.5	X	Sandy Clay; Mod. Y. Brown, cohesive, moist.	
5						
						8.5' ▽WD
8	6-12-9	(21)	8-9.5	X	Sandy Clay; Med. Y. Brown, higher med. grained sand content than above, cohesive, moist	
10						6.65 ▽ Artesian
					12' gray Clayey Sand Begins	10' ±Cuttings
	2-2-2	(4)	13-14.5	X	Clayey Sand; Grayish Blue Green poorly graded, fine to medium grained, loose, moist	
15						
	2-2-2	(4)	18-19.5	X	Silty Sand; Grayish Blue green poorly graded, fine to medium graded, loose, wet.	10 Bags ⊥ 25 sand
20						
21						
					Terminated @ 21.24' BGS Silty Sand w/ clay; Gray on cutter head	
25						
30						TD BTOP 24.24
						~~11.0~~ 11.01 BTOP (not stabilized)
35						
40						

Completion Depth 21.24' BGS Depth to Water in Boring 8.61 BTOP ☐ Set ☑ 24 Hrs

Date 9/21/06 Field Agent J. Pfohl & Maddox

1 of 1

LOG OF BORING NO. P3-17

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5"OD HSA, WSS Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
	2-3-4	(7)	0-1.5	X	Sandy Clay; Lt. Brown w/ dark Y. Orange mottles, tence fragile, sand, very cohesive, Root debris, moist	
	2-3-5	(8)	3-4.5	X	Sandy Clay; Same as above but lacks roots.	
5						
					~7' Clay to Sand	▽ ~10' BGS WD
	6-6-6	(12)	8-9.5	X	Silty Sand; Grayish orange fine grained sand laminated w/ very pale orange silt; tence clay, moist	
10						
				X	Silty Sand; Same as above but lacks clay	
15	5-5-5	(10)	13-14.5			
	2-2-1	(3)	18-19.5	X	Silty Sand; Very light gray to white fine to medium grained, lease, saturated	
20					Terminated @ 21.05' BGS	
25						
30						
35						
40						

Completion Depth 21.05 BGS Depth to Water in Boring 8.38 BTOP ☐ Set ☑ 24 Hrs

Date 9/25/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-18S

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
						∇ ~0.5' BGS WD
5					See Boring Log for adjacent P3-18D for Soil Descriptions	
10						
15						
					Terminated @ 16.17' BGS	
20						
25						
30						
35						
40						

Completion Depth 16.17 BGS Depth to Water in Boring 2.90 BTOP ☐ Set ☑ 24 Hrs

Date 9/26/06 Field Agent J. Pfohl

1 of 1

LOG OF BORING NO. P3-18D

Project: Wayne Co. LF ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, w/SS, 3 7/8" Mud Drill Drilling Company: Derry's Well Drilling

Municipal Services Garner, N.C. — Engineering Company, P.A. Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
1	2-3-3	(6)	0-1.5	X	Top Soil; Black humus organic soil, root debris, "creek mud", wet	
5	7-13-14	(27)	3-4.5	X	Silty Sand; Grayish green medium grained, wet	
					6' Green Sand to white Sand	
10	2-3-4	(7)	8-9.5	X	Silty Sand; Very Lt. Gray to white fine grained, no relict structure, saturated	
15	2-2-1	(3)	13-14.5	X	Silty Sand; Same as above but very loose, saturated	
					16' White sand to Gray Sand	
					17.78' Black clay Begins	
20	28-39-46	(85)	18-19.5	X	Clay w sand; Black very cohesive abundant lignitic wood. "Black Creek formation" very stiff	Pit Cased 0-20' BGS
					17.78-23 increasingly hard w/ depth	Drilling becomes very hard @ 17.78' BGS
23					23-28' Extremely hard Black clay	
25						
30					28-36.98 softer Drilling w/ depth more Gray sand & less clay	
35						
					Terminated @ 36.98' BGS Gray Silty Sand.	
40						

Completion Depth 36.98' BGS

Date 9/28/06 Field Agent J. Pfohl

Depth to Water in Boring Artesian BTOP ☐ Set ☑ 24 Hrs

Flowing Artesian. No Datum established @ 24 Hr. Mark

1 of 1

LOG OF BORING NO. P3-19

Project: Wayne Co. LF, ph. 3 Project No.: G06096.6

Type: 8.5" OD HSA, Drilling Company: Derry's Well Drilling

Municipal Services, Garner, N.C. — Engineering Company, P.A., Boone, N.C.

Depth (ft.)	Blows per Foot	Samples #	Samples Beg. Depth	Samples Retr.	Description of Material	Comments
					Pulled P-6(1") which was installed for the original site study on 1/11/96. The Piez. was installed w/out a grout annulus. Rather than overdrill & abandon Later since in the Berm of the proposed LF, Installed New Piez. in same exact location. P-6(1") was installed to 15' BGS	
					See P-6 Boring Log for Soil Descriptions	
5						
10						
15						
20						
25						
30						
35						
40						

Completion Depth 17.74 BGS Depth to Water in Boring 10.01 BTOP ☐ Set ☑ 24 Hrs

Date 9/30/06 Field Agent J. Pfohl

1 of 1

APPENDIX B

Table B-1: Summary of Laboratory Analysis of Soil Samples

Sample No.	Depth (ft)	Laboratory	USCS Grain Size Distribution (%)			USCS Classification	USCS Symbol	Specific Gravity	Atterberg Limit		
			Gravel	Sand	Silt & Clay				LL	PL	PI
P3-2D	8 - 9.18	Geotechnics	0.00	4.63	95.37	Fat Clay	CH	2.71	64	23	41
P3-4	8 - 9.38	Geotechnics	0.00	77.62	22.38	Silty Sand	SM	2.64	-	NPL	N/A
P3-9	3 - 4.92	Geotechnics	0.00	7.19	92.81	Fat Clay	CH	2.66	67	22	45
P3-9	9 - 10.17	Geotechnics	0.00	32.45	67.55	Sandy Silt	ML	2.69	49	28	21
P3-13	28.5 - 30.5	Geotechnics	2.36	79.12	18.52	Silty Sand	SM	2.77	40	27	13

Sample No.	Depth (ft)	Dry Density (pcf)	Moisture Content	Conductivity (cm/sec)	Total Porosity
P3-2D	8 - 9.18	98.2	23.1%	3.90E-07	42%
P3-4	8 - 9.38	136.2	19.1%	6.80E-05	17%
P3-9	3 - 4.92	122.6	31.7%	5.70E-07	26%
P3-9	9 - 10.17	101.7	32.9%	8.30E-07	39%
P3-13	28.5 - 30.5	83.5	23.0%	5.90E-06	52%

NOTE:

1. Atterberg Limit LL is liquid limit, PL is plastic limit, and PI is plasticity index.
2. Porosity was calculated from its corresponding void ratio by using the Equation n = e/(e+1) where n and e denote the porosity and void ratio.

Table B-2: Recalculation of Grain Size Distribution

Sample No.	Depth (ft)	% Finer than 0.0625 mm						% Finer than 0.004 mm					
		Ref_1		Ref_2		Target		Ref_1		Ref_2		Target	
		Size (mm)	%	Size (mm)	%	Size (mm)	%	Size (mm)	%	Size (mm)	%	Size (mm)	%
P3-2D	8 - 9.18	0.0750	95.4%	0.0275	94.9%	0.0625	**95.3%**	0.0057	61.1%	0.0027	54.5%	0.004	**58.0%**
P3-4	8 - 9.38	0.0750	22.4%	0.0358	20.6%	0.0625	**21.9%**	0.0066	16.6%	0.0033	12.7%	0.004	**13.8%**
P3-9	3 - 4.92	0.0750	92.8%	0.0278	88.5%	0.0625	**92.0%**	0.0057	61.7%	0.0028	57.5%	0.004	**59.6%**
P3-9	9 - 10.17	0.0750	67.6%	0.0312	55.4%	0.0625	**65.0%**	0.0061	39.5%	0.0030	37.5%	0.004	**38.3%**
P3-13	28.5 - 30.5	0.0750	18.5%	0.0328	16.8%	0.0625	**18.1%**	0.0061	13.8%	0.0030	10.9%	0.004	**12.1%**

Sample No.	Depth (ft)	Sand	Silt	Clay
P3-2D	8 - 9.18	**4.7%**	**37.3%**	**58.0%**
P3-4	8 - 9.38	**78.1%**	**8.2%**	**13.8%**
P3-9	3 - 4.92	**8.0%**	**32.4%**	**59.6%**
P3-9	9 - 10.17	**35.0%**	**26.7%**	**38.3%**
P3-13	28.5 - 30.5	**81.9%**	**6.1%**	**12.1%**

NOTE:

Accumulative percentages of the target grain sizes (0.0625mm and 0.004mm) were interpolated from the grain-size percentages at either end of a specific segment (denoted Ref1 and Ref2, respectively) in which a target grain size falls. The numbers were taken from the grain size analysis report submitted by Geotechnics.

Table B-3: Effective Porosity Summary

Sample No.	Depth (ft)	AGU Classification	AGU Grain Size Distribution			Effective Porosity
			Sand	Silt	Clay	
P3-2D	8 - 9.18	Silty Clay	4.7%	37.3%	58.0%	**0.5%**
P3-4	8 - 9.38	Silty Sand	78.1%	8.2%	13.8%	**19%**
P3-9	3 - 4.92	Clay	8.0%	32.4%	59.6%	**0.6%**
P3-9*	9 - 10.17	Sandy Clay	35.0%	26.7%	38.3%	**3%**
P3-13	28.5 - 31.5	Silty Sand	81.9%	6.1%	12.1%	**21%**

NOTE:

1. The proportions of sand, silt, and clay displayed in Table B-3 are in accordance with the recommendation made by the American Geophysical Union (AGU) Subcommittee on Sediment Terminology. This particle-size classification system is widely adopted in recent USGS publications. Because the AGU soil classification system is different for that defined in the Unified Soil Classification System (USCS), the grain sizes for a soil sample were recalculated in Table B-2. Note that determining particle-size distribution by the AGU classification system is a prerequisite for using Johnson's trilinear graph for effective porosity calculations.
2. Johnson's trilinear graph was used to graphically determine the effective porosity of a soil sample.
3. * Effective porosity of P3-9 (9'-10.17') fell into an “area of no samples” on the trilinear graph, and was estimated based on published results (Fetter 1994)

Geotechnics

.....GEOTECHNICAL, GEOENVIRONMENTAL, AND GEOSYNTHETIC LABORATORIES

October 5, 2006

Project No. 2006-615-01

Mr. Jonathon Pfohl
Municipal Engineering Co.
P.O. Box 98
Garner, NC 27529

Transmittal
Laboratory Test Results
Wayne Co. Subtitle D Landfill Phase 3

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
Geotechnics, Inc.

Michael P. Smith
Regional Manager

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

DCN: Data Transmittal Letter Date: 1/28/05 Rev.: 1

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INTEGRITY IN TESTING

ATTERBERG LIMIT

ASTM D 4318-00 (SOP - S4)

Client	MESCO	Boring No.	P3-4
Client Reference	WAYNE CO. SUB.D LF PH.3	Depth (ft)	8-9.38
Project No.	2006-615-01	Sample No.	TUBE
Lab ID	2006-615-01-01	Visual Description	**TANISH BROWN SILTY SAND**
			(MInus No. 40 sieve material, Wet Method)

NON - PLASTIC MATERIAL

Tested By JKR *Date* 9/25/2006 *Checked By* CRM *Date* 10-5-06

page 1 of 1 DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 NP LIMIT.xls]Sheet1*

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INTEGRITY IN TESTING

SPECIFIC GRAVITY

ASTM D 854-00 (SOP - S5)

Client	MESCO	Boring No.	P3-4
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	8.2-8.6
Project No.	2006-615-01	Sample No.	TUBE
Lab ID	2006-615-01-01	Visual Description	**TANISH BROWN SILTY SAND**
			(MInus No.4 sieve material, airdried)

Replicate Number	**1**	**2**
Pycnometer ID	R 292	R 280
Weight of Pycnometer + Soil + Water (gm)	703.87	716.5
Temperature, T (°Celsius)	24.8	24.5
Weight of Pycnometer + Water (gm)	673.14	685.51
Tare Number	217	250
Weight of Tare + Dry Soil (gm)	220.74	219.08
Weight of Tare (gm)	171.08	169.37
Weight of Dry Soil (gm)	49.66	49.71
Specific Gravity of Soil @ T	2.623	2.655
Specific Gravity of Water @ T	0.9971	0.9972
Conversion Factor for Temperature T	0.9989	0.9990
Specific Gravity @ 20° Celsius	2.626	2.658

Average Specific Gravity @ 20° Celsius	2.64

Tested By *MCW* *Date* *10/3/2006* *Checked By* *Date*

DCN: CT-S5 Date: 03/24/05 Revision: 10R *Z:\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 Specific Gravity.xls]Sheet1*

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INTEGRITY IN TESTING

MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

Client	MESCO
Client Reference	WAYNE CO. SUB D LF, PH. 3
Project No.	2006-615-01

Lab ID	.001
Boring No.	P3-4
Depth (ft)	8.2-8.6
Sample No.	TUBE
Tare Number	214
Wt. of Tare & WS (gm)	215.84
Wt. of Tare & DS (gm)	208.71
Wt. of Tare (gm)	171.34
Wt. of Water (gm)	7.13
Wt. of DS (gm)	37.37
Water Content (%)	**19.1**

Notes : *NA*

Tested By *BD* *Date* *10/2/2006* *Checked By* GEM *Date* 10-5-06

page 1 of 1 DCN: CT-S1 DATE 6-30-98 REVISION: 2 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\2006-615-01 WATCONT.XLS]Sheet1*

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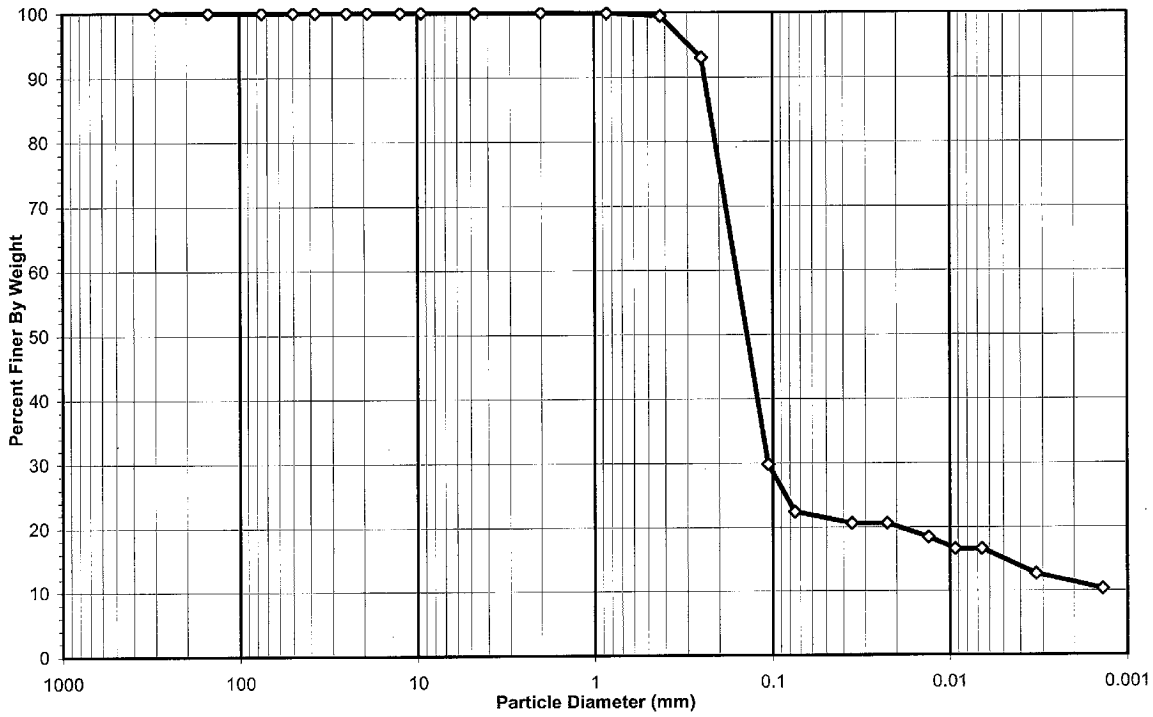
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-4
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	8.2-8.6'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID	2006-615-01-01	Soil Color	**TANISH BROWN**

	SIEVE ANALYSIS					*HYDROMETER*
USCS	**cobbles**	**gravel**	**sand**			**silt and clay fraction**
USDA	**cobbles**	**gravel**	**sand**		**silt**	**clay**

12" 6" 3" 3/4" 3/8" #4 #10 #20 #40 #140 #200



USCS Summary

Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	77.62
Finer Than #200	*Silt & Clay*	22.38

USCS Symbol ***SM, TESTED (NON PLASTIC FINES)***

USCS Classification ***SILTY SAND***

page 1 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1*

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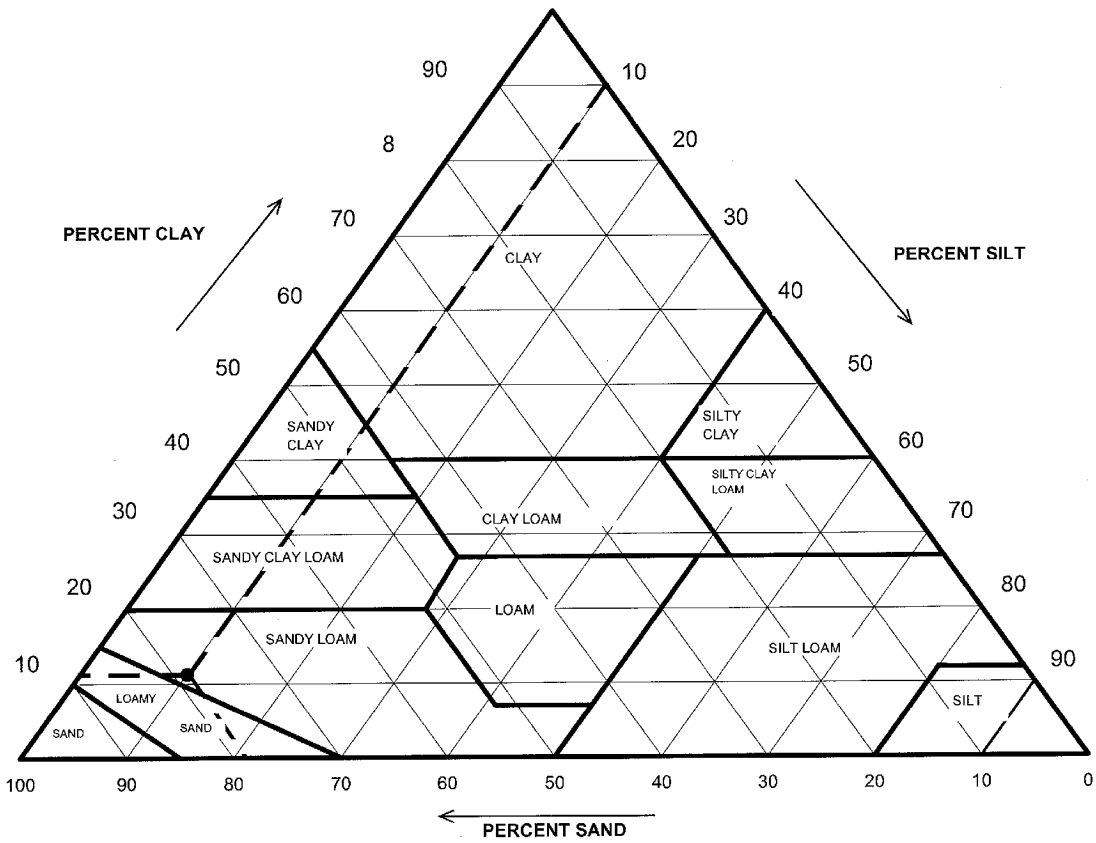
USDA CLASSIFICATION CHART

Client	MESCO	Boring No.	P3-4
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	8.2-8.6'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID	2006-615-01-01	Soil Color	TANISH BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.00	**0.00**
2	100.00	*Sand*	78.66	**78.66**
0.05	21.34	*Silt*	10.08	**10.08**
0.002	11.26	*Clay*	11.26	**11.26**

USDA Classification: ***SANDY LOAM***

page 2 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1

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WASH SIEVE ANALYSIS #10 SPLIT

ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-4
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	8.2-8.6'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID	2006-615-01-01	Soil Color	**TANISH BROWN**

Moisture Content/sieve +10 Material		Moisture Content for Hydrometer Portion	
Tare No.	214	Tare No.	P-1
Wgt.Tare + Wet Soil (gm)	215.84	Wgt.Tare + Wet Soil (gm)	37.02
Wgt.Tare + Dry Soil (gm)	208.71	Wgt.Tare + Dry Soil (gm)	36.88
Weight of Tare (gm)	171.34	Weight of Tare (gm)	22.00
Weight of Water (gm)	7.13	Weight of Water (gm)	0.14
Weight of Dry Soil (gm)	37.37	Weight of Dry Soil (gm)	14.88
Moisture Content (%)	**19.1**	**Moisture Content (%)**	**0.9**

Soil Specimen Data			
Wet Weight +#10 Material (gm)	44.50	Weight of the Dry Sample (gm)	86.90
Dry Weight +#10 Material(gm)	37.4	Weight of minus #200 material (gm)	11.08
Wet Weight Hydro. Material.(gm)	50.00	Weight of plus #200 material (gm)	75.82
Dry Weight Hydro. Material (gm)	49.53		
Total Dry Weight Sample (gm)	86.90	**J-FACTOR (%FINER THAN #10)**	**1.0000**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.00	0.00	0.00	100.00	**100.00**
#20	0.85	0.05	0.10	0.10	99.90	**99.90**
#40	0.425	0.22	0.44	0.55	99.45	**99.45**
#60	0.250	3.21	6.48	7.03	92.97	**92.97**
#140	0.106	31.29	63.17	70.19	29.81	**29.81**
#200	0.075	3.68	7.43	77.62	22.38	**22.38**
Pan	-	11.08	22.38	100.00	-	-

Notes :

Tested By BD Date 10/2/2006 Checked By GEM Date 10-5-06

page 3 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1*

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HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-4
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	8.2-8.6'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID	2006-615-01-01	Soil Color	**TANISH BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	15.0	15.0	20.5	4.81	10.2	20.6	0.01361	0.0358	**20.6**
5		15.0	20.5	4.81	10.2	20.6	0.01361	0.0226	**20.6**
15		14.0	20.3	4.87	9.1	18.5	0.01364	0.0132	**18.5**
30		13.0	20.6	4.78	8.2	16.6	0.01359	0.0093	**16.6**
60		13.0	20.6	4.78	8.2	16.6	0.01359	0.0066	**16.6**
250		11.0	20.8	4.72	6.3	12.7	0.01356	0.0033	**12.7**
1440		10.0	20.2	4.90	5.1	10.3	0.01365	0.0014	**10.3**

Soil Specimen Data		**Other Corrections**	
Tare + Dry Material (gm)	49.53	a - Factor	1.002
Weight of Tare (gm)	0		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 10	100.00
Weight of Dry Material (gm)	49.53		
		Specific Gravity	2.64 Measured

Note:

Tested By MCW Date 9/27/2006 Checked By Gam Date 10-5-06

page 4 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1*

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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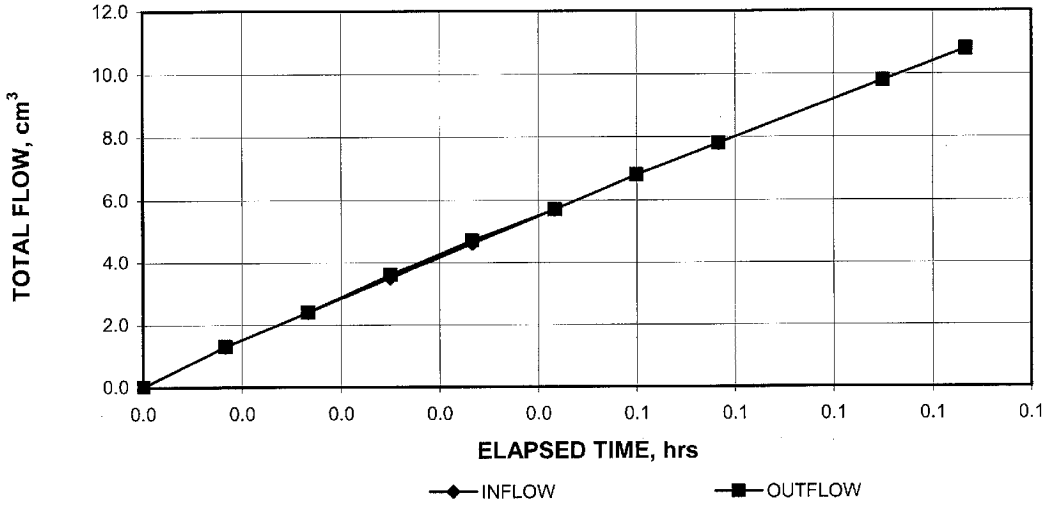
INTEGRITY IN TESTING

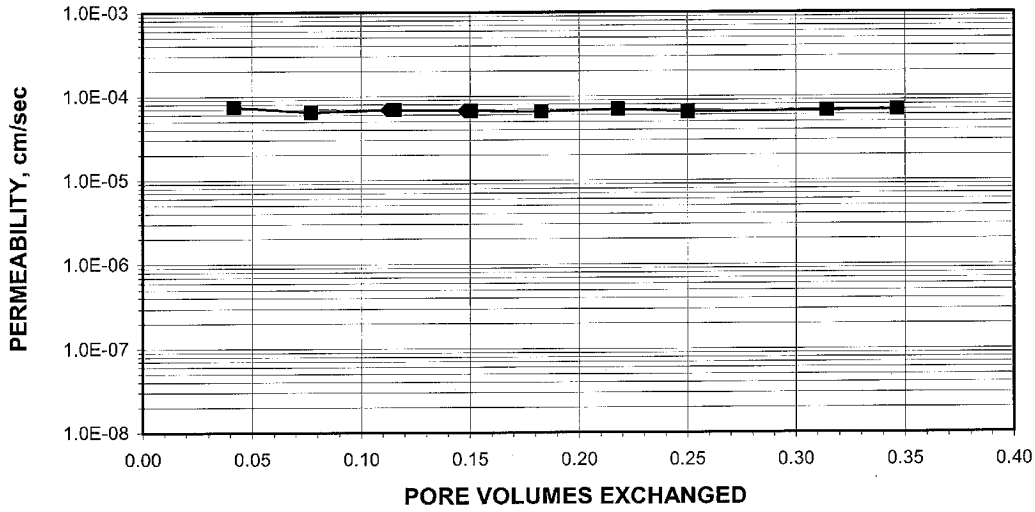
Client	MESCO	Boring No.	P3-4
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	8.6-8.9'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID No.	2006-615-01-01		

AVERAGE PERMEABILITY = 6.8E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.8E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: MCW Date: 9/26/2006 Checked By: GOM Date: 10-5-06

Page 1 of 3 DCN: CT-22 DATE: 01-08-99 REVISION: 2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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INTEGRITY IN TESTING

Client	MESCO	Boring No.	P3-4
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	8.6-8.9'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID No.	2006-615-01-01		
		Specific Gravity	2.64 Measured
		Sample Condition	Undisturbed

Visual Description: TANISH BROWN SILTY SAND

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	214	306
Wt. of Tare & WS (gm.)	215.84	780.10
Wt. of Tare & DS (gm.)	208.71	653.21
Wt. of Tare (gm.)	171.37	88.19
Wt. of Water (gm.)	7.13	126.89
Wt. of DS (gm.)	37.34	565.02
Moisture Content (%)	**19.1**	**22.5**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	946.00	NA
Wt. of Tube (gm.)	0.00	NA
Wt. of WS (gm.)	946.00	972.71
Length 1 (in.)	3.547	3.321
Length 2 (in.)	3.544	3.247
Length 3 (in.)	3.535	3.307
Top Diameter (in.)	2.832	2.827
Middle Diameter (in.)	2.807	2.808
Bottom Diameter (in.)	2.838	2.764
Average Length (in.)	3.54	3.29
Average Area (in.^{2})	6.27	6.16
Sample Volume (cm^3)	363.98	332.06
Unit Wet Wt. (gm./ cm^3)	2.60	2.93
Unit Wet Wt. (pcf)	162.2	182.9
Unit Dry Wt. (pcf)	136.2	149.3
Unit Dry Wt. (gm./ cm^3)	2.18	2.39
Void Ratio, e	0.21	0.10
Porosity, n	0.17	0.09
Pore Volume (cm^3)	63.1	31.2

Tested By: MCW Date: 9/26/2006 Checked By: GBM Date: 10-5-06

Page 2 of 3 DCN: CT-22 DATE: 01-08-99 REVISION:2\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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INTEGRITY IN TESTING

Client	MESCO	Boring No.	P3-4
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	8.6-8.9'
Project No.	2006-615-01	Sample No.	TUBE
Lab ID No.	2006-615-01-01		

Pressure Heads (Constant)		Final Sample Dimensions	
Top Cap (psi)	48.5	Sample Length (cm), L	8.36
Bottom Cap (psi)	50.0	Sample Diameter (cm)	7.11
Cell (psi)	55.0	Sample Area (cm^2), A	39.72
Total Pressure Head (cm)	105.5	Inflow Burette Area (cm^2), a-in	0.979
Hydraulic Gradient	12.61	Outflow Burette Area (cm^2), a-out	0.906
		B Parameter (%)	95

AVERAGE PERMEABILITY = 6.8E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.8E-07 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
9/26/2006	16	14	0.0	0.0	0.0	121.0	0	21.0	NA
9/26/2006	16	14.5	0.0	1.3	1.3	118.2	0	21.0	7.4E-05
9/26/2006	16	15	0.0	2.4	2.4	115.9	0	21.0	6.4E-05
9/26/2006	16	15.5	0.0	3.5	3.6	113.5	0	21.0	6.9E-05
9/26/2006	16	16	0.0	4.6	4.7	111.1	0	21.0	6.7E-05
9/26/2006	16	16.5	0.0	5.7	5.7	108.9	0	21.0	6.5E-05
9/26/2006	16	17	0.1	6.8	6.8	106.6	0	21.0	7.0E-05
9/26/2006	16	17.5	0.1	7.8	7.8	104.4	0	21.0	6.5E-05
9/26/2006	16	18.5	0.1	9.8	9.8	100.2	0	21.0	6.7E-05
9/26/2006	16	19	0.1	10.8	10.8	98.1	1	21.0	6.9E-05

Tested By: MCW Date: 9/26/2006 Checked By: GBM Date: 10-5-06

Page 3 of 3

DCN: CT-22 DATE: 01-08-99 REVISION:2\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-01-01 SIEVE HYDRO.xls]Sheet1

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.....GEOTECHNICAL, GEOENVIRONMENTAL, AND GEOSYNTHETIC LABORATORIES

October 6, 2006

Project No. 2006-615-02

Mr. Jonathon Pfohl
Municipal Engineering Co.
P.O. Box 98
Garner, NC 27529

Transmittal
Laboratory Test Results
Wayne Co. Subtitle D Landfill Phase 3

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
Geotechnics, Inc.

Michael P. Smith
Regional Manager

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

DCN: Data Transmittal Letter Date: 1/28/05 Rev.: 1

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MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

Client	MESCO
Client Reference	WAYNE CO. SUB D LF, PH. 3
Project No.	2006-615-02

Lab ID	.001	.002
Boring No.	P3-9	P3-9
Depth (ft)	3-4.92	9-10.17
Sample No.	NA	NA
Tare Number	208	200
Wt. of Tare & WS (gm)	251.62	244.36
Wt. of Tare & DS (gm)	231.93	226.41
Wt. of Tare (gm)	169.86	171.77
Wt. of Water (gm)	19.69	17.95
Wt. of DS (gm)	62.07	54.64
Water Content (%)	**31.7**	**32.9**

Notes : *NA*

Tested By *BD* *Date* *10/2/2006* *Checked By* GEM *Date* 10-5-06

page 1 of 1 DCN: CT-S1 DATE 6-30-98 REVISION: 2 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02 WATCONT.XLS]Sheet1*

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ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB. D LF, PH 3	Depth (ft)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-01	Soil Description	**GRAYISH RED FAT CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

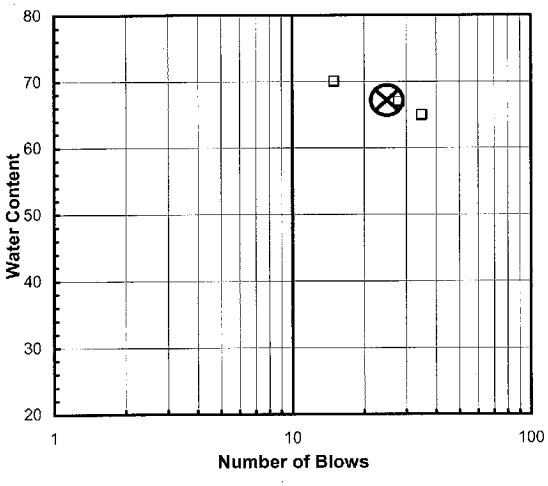
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	A-G	Z-Y	A-B	**MULTIPOINT**
Wt. of Tare & WS (gm)	24.80	29.46	28.07	
Wt. of Tare & DS (gm)	21.00	24.01	23.15	
Wt. of Tare (gm)	15.57	15.87	15.57	
Wt. of Water (gm)	3.8	5.5	4.9	
Wt. of DS (gm)	5.4	8.1	7.6	
Moisture Content (%)	**70.0**	**67.0**	**64.9**	
Number of Blows	**15**	**28**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	A-C	T	
Wt. of Tare & WS (gm)	21.90	21.78	
Wt. of Tare & DS (gm)	20.79	20.60	
Wt. of Tare (gm)	15.57	15.26	
Wt. of Water (gm)	1.1	1.2	
Wt. of DS (gm)	5.2	5.3	
Moisture Content (%)	**21.3**	**22.1**	**-0.8**

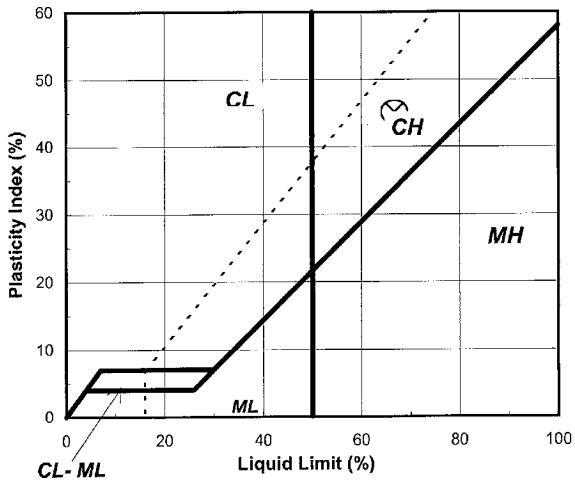
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**67**
Plastic Limit (%)	**22**
Plasticity Index (%)	**45**
USCS Symbol	**CH**

Flow Curve



Plasticity Chart



Tested By JGC *Date* 10/5/2006 *Checked By* GEM *Date* 10-6-06

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/2001 **REVISION:** 2

\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 LIMIT.xls]Sheet1

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INTEGRITY IN TESTING

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB. D LF, PH 3	Depth (ft)	9-10.17
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-02	Soil Description	**LIGHT BROWN SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

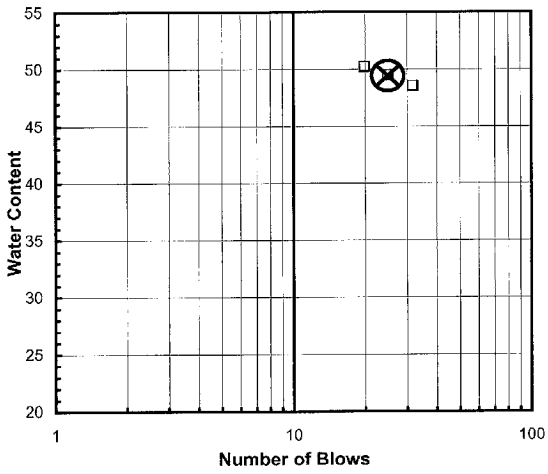
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	E	A-Q	A-K	**MULTIPOINT**
Wt. of Tare & WS (gm)	22.64	26.64	24.44	
Wt. of Tare & DS (gm)	20.19	22.96	21.54	
Wt. of Tare (gm)	15.31	15.52	15.56	
Wt. of Water (gm)	2.5	3.7	2.9	
Wt. of DS (gm)	4.9	7.4	6.0	
Moisture Content (%)	**50.2**	**49.5**	**48.5**	
Number of Blows	**20**	**25**	**32**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	I	A-T	
Wt. of Tare & WS (gm)	23.46	23.78	
Wt. of Tare & DS (gm)	21.62	22.00	
Wt. of Tare (gm)	15.27	15.60	
Wt. of Water (gm)	1.8	1.8	
Wt. of DS (gm)	6.4	6.4	
Moisture Content (%)	**29.0**	**27.8**	**1.2**

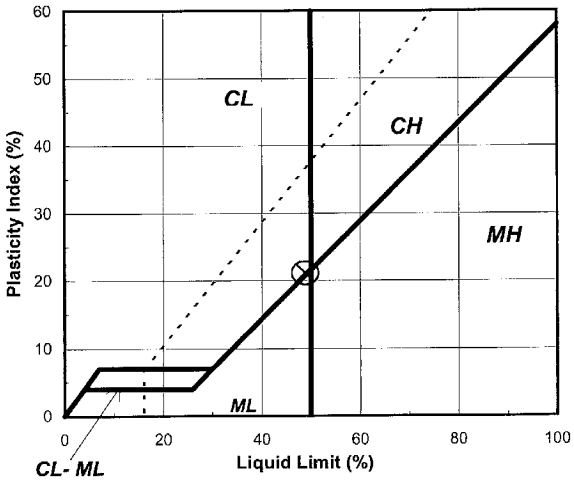
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**49**
Plastic Limit (%)	**28**
Plasticity Index (%)	**21**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



Tested By *JKR* *Date* *9/25/2006* *Checked By* GZM *Date* 9-27-06

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/2001 **REVISION:** 2

\\Lab1\c\2006 PROJECTS\2006-613 MOSHER ENG\[2006-613-01-07 Limit-(NP).xls]Sheet1

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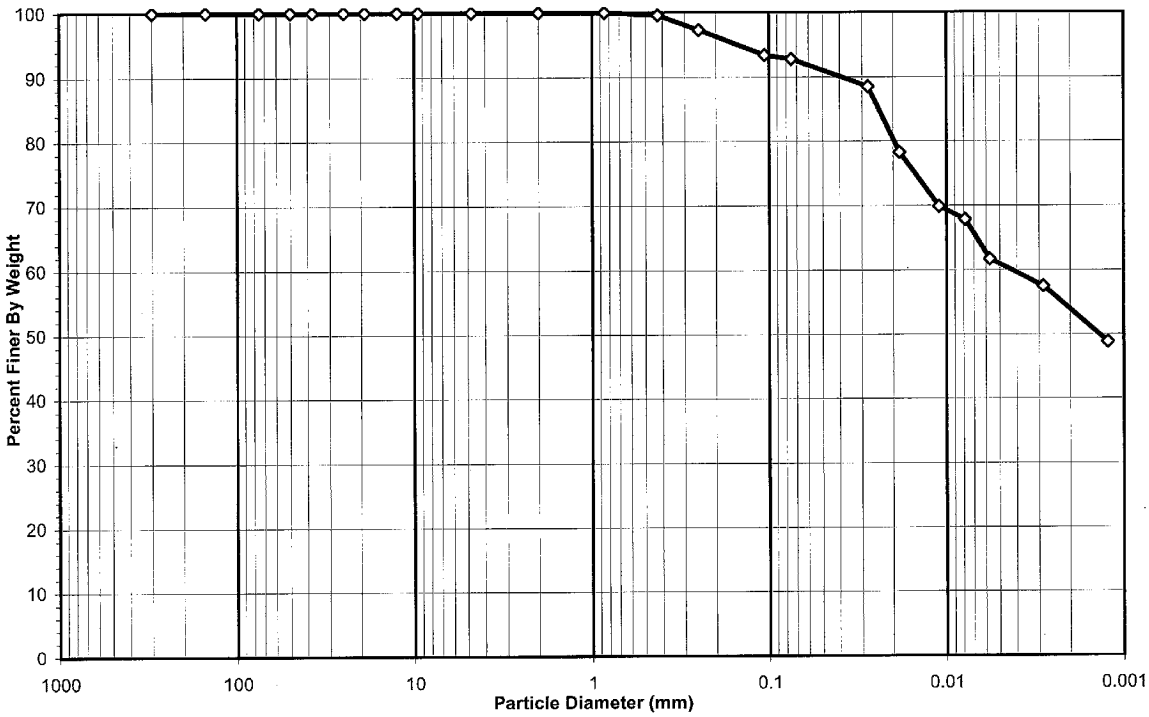
INTEGRITY IN TESTING

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-01	Soil Color	**GRAYISH RED**

	SIEVE ANALYSIS					*HYDROMETER*
USCS	**cobbles**	**gravel**	**sand**			**silt and clay fraction**
USDA	**cobbles**	**gravel**	**sand**		**silt**	**clay**

12" 6" 3" 3/4" 3/8" #4 #10 #20 #40 #140 #200



Sieve Sizes (mm)	**USCS Summary**	**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	7.19
Finer Than #200	*Silt & Clay*	92.81

USCS Symbol ***CH, TESTED***

USCS Classification ***FAT CLAY***

page 1 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 SIEVE HYDRO.xls]Sheet1*

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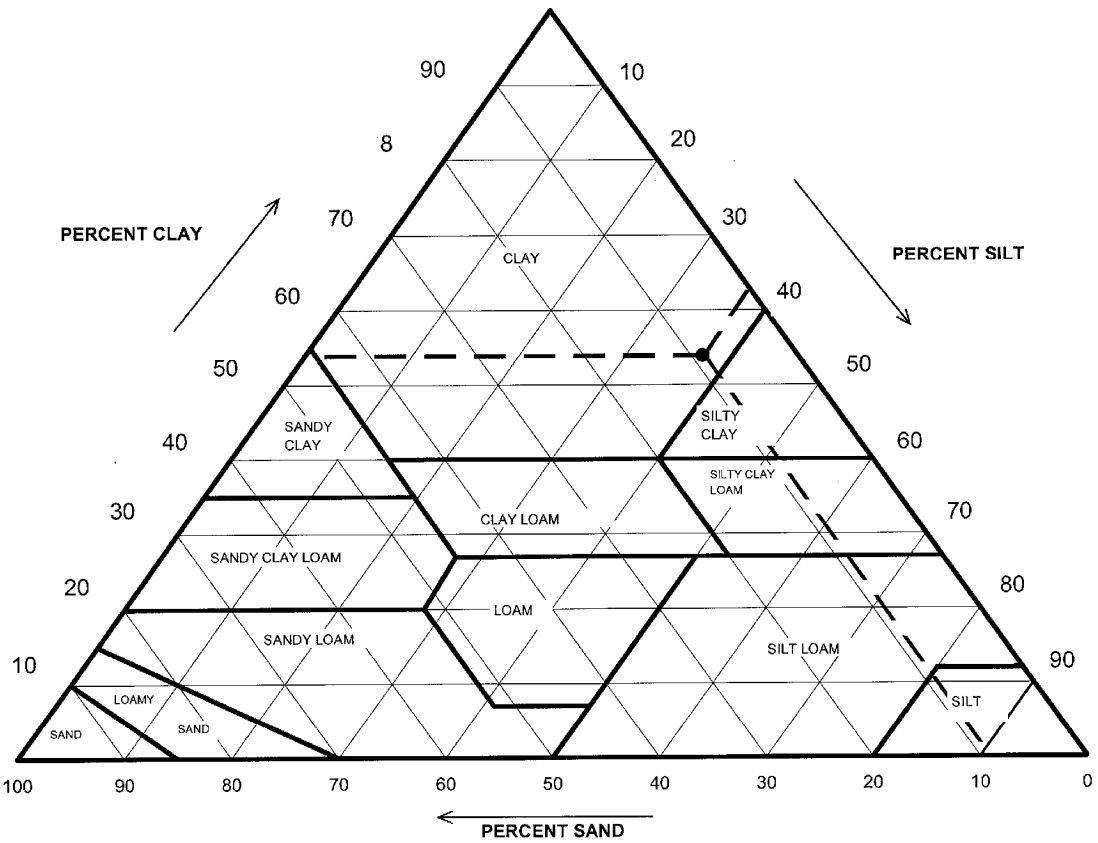
USDA CLASSIFICATION CHART

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-01	Soil Color	GRAYISH RED



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.00	**0.00**
2	100.00	*Sand*	8.94	**8.94**
0.05	91.06	*Silt*	37.18	**37.18**
0.002	53.88	*Clay*	53.88	**53.88**

USDA Classification: ***CLAY***

page 2 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 SIEVE HYDRO.xls]Sheet1

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WASH SIEVE ANALYSIS #10 SPLIT

ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-01	Soil Color	**GRAYISH RED**

Moisture Content/sieve +10 Material		Moisture Content for Hydrometer Portion	
Tare No.	208	Tare No.	C-1
Wgt.Tare + Wet Soil (gm)	251.62	Wgt.Tare + Wet Soil (gm)	37.02
Wgt.Tare + Dry Soil (gm)	231.93	Wgt.Tare + Dry Soil (gm)	36.62
Weight of Tare (gm)	169.86	Weight of Tare (gm)	22.02
Weight of Water (gm)	19.69	Weight of Water (gm)	0.40
Weight of Dry Soil (gm)	62.07	Weight of Dry Soil (gm)	14.60
Moisture Content (%)	**31.7**	**Moisture Content (%)**	**2.7**

Soil Specimen Data			
Wet Weight +#10 Material (gm)	81.76	Weight of the Dry Sample (gm)	110.77
Dry Weight +#10 Material(gm)	62.1	Weight of minus #200 material (gm)	45.20
Wet Weight Hydro. Material.(gm)	50.03	Weight of plus #200 material (gm)	65.57
Dry Weight Hydro. Material (gm)	48.70		
Total Dry Weight Sample (gm)	110.77	**J-FACTOR (%FINER THAN #10)**	**1.0000**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.00	0.00	0.00	100.00	**100.00**
#20	0.85	0.00	0.00	0.00	100.00	**100.00**
#40	0.425	0.19	0.39	0.39	99.61	**99.61**
#60	0.250	1.11	2.28	2.67	97.33	**97.33**
#140	0.106	1.90	3.90	6.57	93.43	**93.43**
#200	0.075	0.30	0.62	7.19	92.81	**92.81**
Pan	-	45.20	92.81	100.00	-	-

Notes :

Tested By BD Date 10/2/2006 Checked By GEM Date 10-6-06

page 3 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 SIEVE HYDRO.xls]Sheet1*

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HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-01	Soil Color	**GRAYISH RED**

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	48.0	48.0	20.5	4.81	43.2	88.5	0.01352	0.0278	**88.5**
5		43.0	20.5	4.81	38.2	78.3	0.01352	0.0184	**78.3**
15		39.0	20.2	4.90	34.1	69.9	0.01357	0.0110	**69.9**
30		38.0	20.2	4.90	33.1	67.8	0.01357	0.0079	**67.8**
60		35.0	20.2	4.90	30.1	61.7	0.01357	0.0057	**61.7**
250		33.0	20.1	4.93	28.1	57.5	0.01359	0.0028	**57.5**
1440		29.0	19.2	5.19	23.8	48.8	0.01374	0.0012	**48.8**

Soil Specimen Data		**Other Corrections**	
Tare + Dry Material (gm)	48.70	a - Factor	0.998
Weight of Tare (gm)	0		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 10	100.00
Weight of Dry Material (gm)	48.70		
		Specific Gravity	2.66 Measured

Note:

Tested By MCW Date 9/27/2006 Checked By GZM Date 10-6-06

page 4 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 SIEVE HYDRO.xls]Sheet1*

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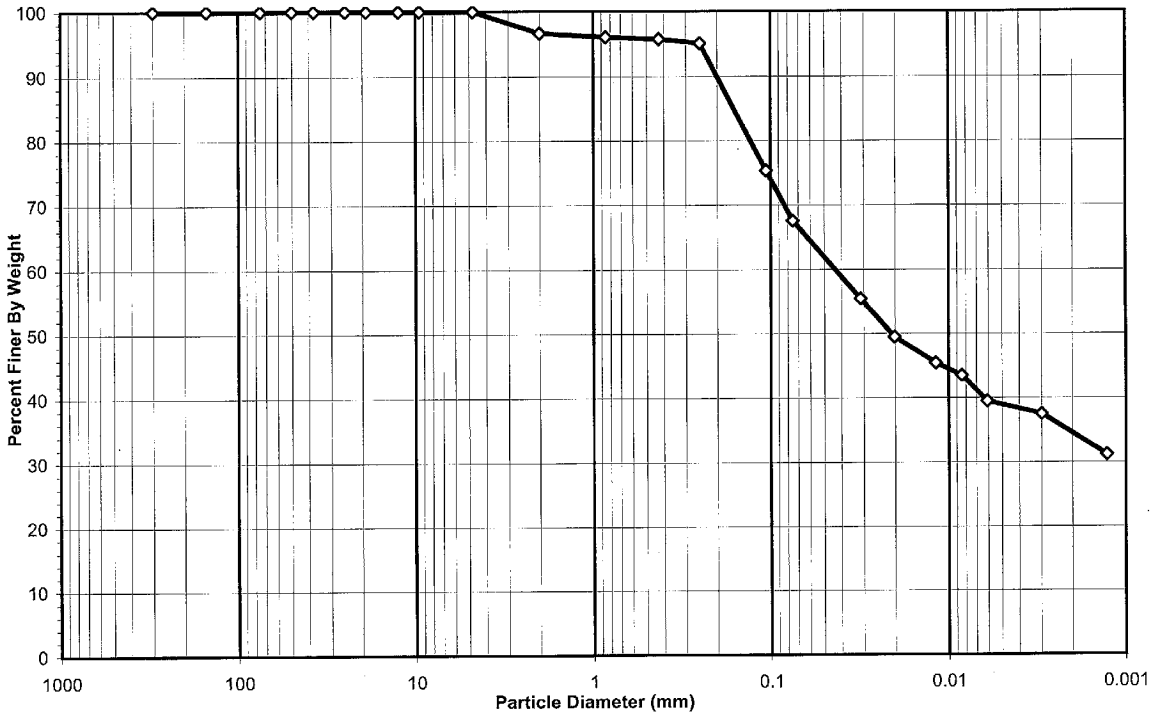
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	9-10.17
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-02	Soil Color	**LIGHT BROWN**

	SIEVE ANALYSIS			*HYDROMETER*	
USCS	**cobbles**	**gravel**	**sand**	**silt and clay fraction**	
USDA	**cobbles**	**gravel**	**sand**	**silt**	**clay**

12" 6" 3" 3/4" 3/8" #4 #10 #20 #40 #140 #200



USCS Summary

Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	32.45
Finer Than #200	*Silt & Clay*	67.55

USCS Symbol ***ML, TESTED***

USCS Classification ***SANDY SILT***

page 1 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 SIEVE HYDRO.xls]Sheet1*

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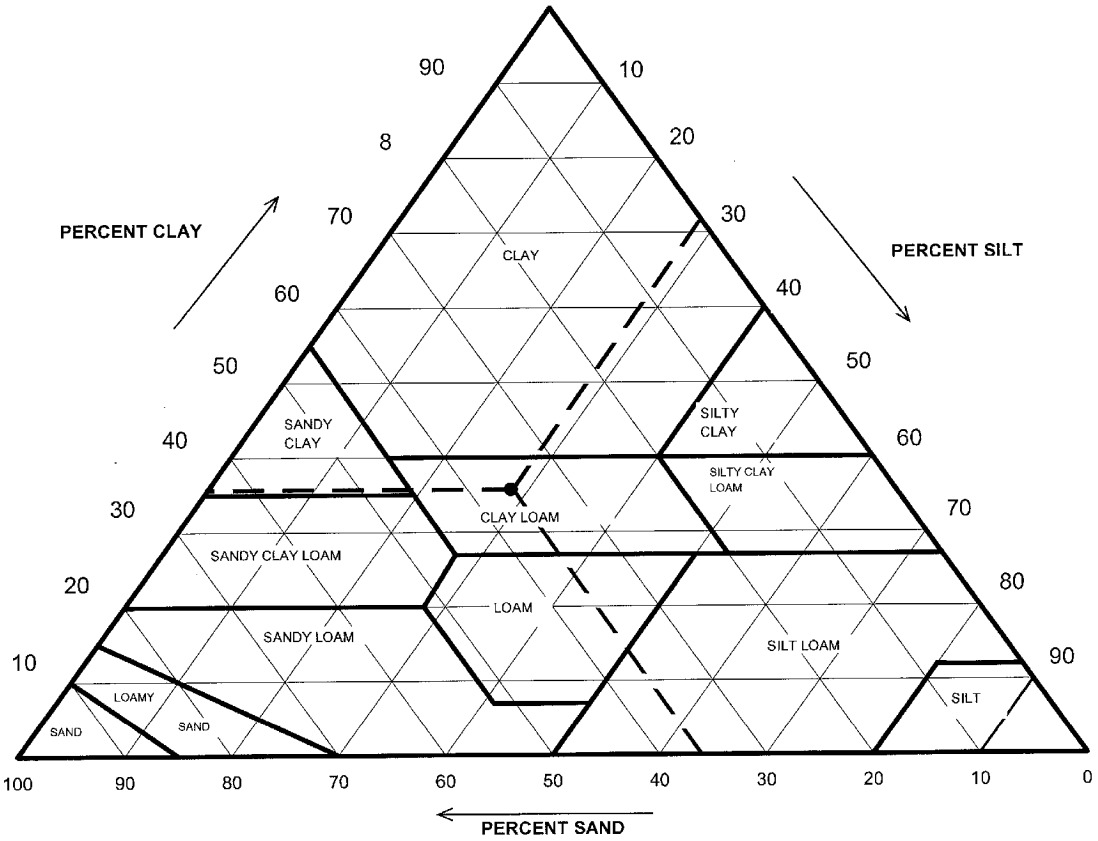
USDA CLASSIFICATION CHART

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	9-10.17
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-02	Soil Color	LIGHT BROWN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	3.33	**0.00**
2	96.67	*Sand*	34.73	**35.93**
0.05	61.94	*Silt*	27.42	**28.36**
0.002	34.52	*Clay*	34.52	**35.71**

USDA Classification: ***CLAY LOAM***

page 2 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 SIEVE HYDRO.xls]Sheet1

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WASH SIEVE ANALYSIS #10 SPLIT

ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	9-10.17
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-02	Soil Color	**LIGHT BROWN**

Moisture Content/sieve +10 Material		Moisture Content for Hydrometer Portion	
Tare No.	200	Tare No.	E-2
Wgt.Tare + Wet Soil (gm)	244.36	Wgt.Tare + Wet Soil (gm)	36.86
Wgt.Tare + Dry Soil (gm)	226.41	Wgt.Tare + Dry Soil (gm)	36.45
Weight of Tare (gm)	171.77	Weight of Tare (gm)	21.93
Weight of Water (gm)	17.95	Weight of Water (gm)	0.41
Weight of Dry Soil (gm)	54.64	Weight of Dry Soil (gm)	14.52
Moisture Content (%)	**32.9**	**Moisture Content (%)**	**2.8**

Soil Specimen Data			
Wet Weight +#10 Material (gm)	72.59	Weight of the Dry Sample (gm)	103.28
Dry Weight +#10 Material(gm)	54.6	Weight of minus #200 material (gm)	33.99
Wet Weight Hydro. Material.(gm)	50.01	Weight of plus #200 material (gm)	69.29
Dry Weight Hydro. Material (gm)	48.64		
Total Dry Weight Sample (gm)	103.28	**J-FACTOR (%FINER THAN #10)**	**0.9667**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	1.82	3.33	3.33	96.67	**96.67**
#20	0.85	0.31	0.64	0.64	99.36	**96.05**
#40	0.425	0.15	0.31	0.95	99.05	**95.75**
#60	0.250	0.34	0.70	1.64	98.36	**95.08**
#140	0.106	9.92	20.40	22.04	77.96	**75.36**
#200	0.075	3.93	8.08	30.12	69.88	**67.55**
Pan	-	33.99	69.88	100.00	-	-

Notes :

Tested By BD Date 10/2/2006 Checked By GZM Date 10-4-06

page 3 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 SIEVE HYDRO.xls]Sheet1*

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HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	9-10.17
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-02	Soil Color	**LIGHT BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	33.0	33.0	20.4	4.84	28.2	57.3	0.01338	0.0312	**55.4**
5		30.0	20.3	4.87	25.1	51.2	0.01340	0.0202	**49.4**
15		28.0	20.1	4.93	23.1	47.0	0.01343	0.0119	**45.4**
30		27.0	20.2	4.90	22.1	45.0	0.01341	0.0084	**43.5**
60		25.0	20.1	4.93	20.1	40.9	0.01343	0.0061	**39.5**
250		24.0	20.1	4.93	19.1	38.8	0.01343	0.0030	**37.5**
1440		21.0	19.3	5.16	15.8	32.2	0.01356	0.0013	**31.2**

Soil Specimen Data		**Other Corrections**	
Tare + Dry Material (gm)	48.64	a - Factor	0.99
Weight of Tare (gm)	0		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 10	96.67
Weight of Dry Material (gm)	48.64		
		Specific Gravity	2.7 Assumed

Note:

Tested By MCW Date 9/29/2006 Checked By Gem Date 10.4.06

page 4 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 SIEVE HYDRO.xls]Sheet1*

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SPECIFIC GRAVITY

ASTM D 854-00 (SOP - S5)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-01	Visual Description	**GRAYISH RED FAT CLAY** (MInus No.4 sieve material, airdried)

Replicate Number	**1**	**2**
Pycnometer ID	R 280	R 292
Weight of Pycnometer + Soil + Water (gm)	716.22	703.62
Temperature, T (°Celsius)	23.1	23.1
Weight of Pycnometer + Water (gm)	685.51	673.35
Tare Number	G-5	G-15
Weight of Tare + Dry Soil (gm)	196.47	200.03
Weight of Tare (gm)	147.55	151.28
Weight of Dry Soil (gm)	48.92	48.75
Specific Gravity of Soil @ T	2.686	2.638
Specific Gravity of Water @ T	0.9975	0.9975
Conversion Factor for Temperature T	0.9993	0.9993
Specific Gravity @ 20° Celsius	2.688	2.640

Average Specific Gravity @ 20° Celsius	2.66

Tested By MCW *Date* 10/4/2006 *Checked By* GBM *Date* 10-5-06

DCN: CT-S5 Date: 03/24/05 Revision: 10R

\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 Specific Gravity.xls]Sheet1

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SPECIFIC GRAVITY

ASTM D 854-00 (SOP - S5)

Client	MESCO	Boring No.	P3-9
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	9-10.17
Project No.	2006-615-02	Sample No.	NA
Lab ID	2006-615-02-02	Visual Description	**TANISH BROWN**
			(Minus No.4 sieve material, airdried)

Replicate Number	**1**	**2**
Pycnometer ID	R 280	R 292
Weight of Pycnometer + Soil + Water (gm)	716.71	704.13
Temperature, T (°Celsius)	23.5	23.6
Weight of Pycnometer + Water (gm)	685.51	673.29
Tare Number	G-2	G-13
Weight of Tare + Dry Soil (gm)	204.05	202.32
Weight of Tare (gm)	154.61	152.94
Weight of Dry Soil (gm)	49.44	49.38
Specific Gravity of Soil @ T	2.711	2.663
Specific Gravity of Water @ T	0.9974	0.9974
Conversion Factor for Temperature T	0.9992	0.9992
Specific Gravity @ 20° Celsius	2.713	2.665

Average Specific Gravity @ 20° Celsius	2.69

Tested By MCW *Date* 10/4/2006 *Checked By* Gem *Date* 10-5-06

DCN: CT-S5 Date: 03/24/05 Revision: 10R *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02 Specific Gravity.xls]Sheet1*

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FLEXIBLE WALL PERMEABILITY TEST

PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22C)

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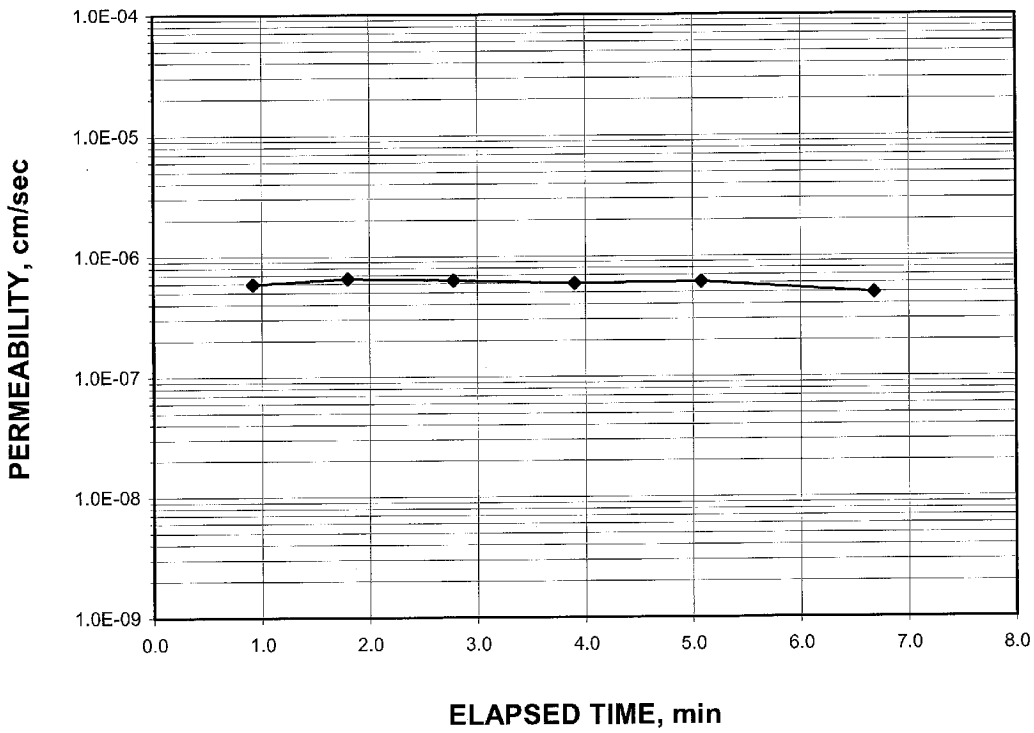
Client	MESCO	Boring No.	P3-9
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID No.	2006-615-02-01		

Visual Description: GRAYISH RED FAT CLAY

AVERAGE PERMEABILITY = 5.7E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.7E-09 m/sec @ 20°C

PERMEABILITY vs. TIME



Tested By: MCW Date: 9/27/2006 Checked By: GBM Date: 10-5-06

DCN: CT-22A DATE:12-21-98 REVISION: 4 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-9
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID No.	2006-615-02-01		

Specific Gravity	2.66	Measured
Sample Condition		Undisturbed

Visual Description: GRAYISH RED FAT CLAY

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	208	317
Wt. of Tare & WS (gm.)	251.62	456.56
Wt. of Tare & DS (gm.)	231.93	370.14
Wt. of Tare (gm.)	169.86	84.11
Wt. of Water (gm.)	19.69	86.42
Wt. of DS (gm.)	62.07	286.03
Moisture Content (%)	**31.7**	**30.2**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	1016.88	NA
Wt. of Tube (gm.)	0.00	NA
Wt. of WS (gm.)	1016.88	1005.23
Length 1 (in.)	3.725	3.628
Length 2 (in.)	3.732	3.649
Length 3 (in.)	3.739	3.575
Top Diameter (in.)	2.867	2.828
Middle Diameter (in.)	2.867	2.813
Bottom Diameter (in.)	2.847	2.862
Average Length (in.)	3.73	3.62
Average Area (in.^{2})	6.43	6.31
Sample Volume (cm^3)	392.98	374.01
Unit Wet Wt. (gm./ cm^3)	2.588	2.688
Unit Wet Wt. (pcf)	161.5	167.8
Unit Dry Wt. (pcf)	122.6	128.8
Unit Dry Wt. (gm./ cm^3)	1.964	2.064
Void Ratio, e	0.354	0.289
Porosity, n	0.261	0.224
Pore Volume (cm^3)	102.8	83.8

Tested By: MCW Date: 9/27/2006 Checked By: GDM Date: 10-5-06

Page 2 of 3 DCN: CT-22A DATE:12-21-98 REVISION: X:\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-9
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	3-4.92
Project No.	2006-615-02	Sample No.	NA
Lab ID No.	2006-615-02-01		

Test Pressures		Final Sample Dimensions	
Cell Pressure(psi)	50.0	Sample Length (cm), L	9.19
Back Pressure(psi)	45.0	Sample Area (cm^2), A	40.71
Eff. Cons. Pressure(psi)	5.0	Pipette Area (cm^2), a_p	0.03142
Response (%)	98	Annulus Area (cm^2), a_a	0.76712
		Equilibrium Level (cm), R_{eq}	1.75

AVERAGE PERMEABILITY = 5.7E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.7E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (min)	PIPETTE READING R_p (cm)	INCREMENT GRADIENT i (cm/cm)	FLOW CONDITION (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
9/27/2006	16	26.9	0	10.0	11.7	0	21.8	NA
9/27/2006	16	27.8	1	9.5	11.0	0	21.8	5.9E-07
9/27/2006	16	28.7	2	9.0	10.3	0	21.9	6.6E-07
9/27/2006	16	29.6	3	8.5	9.6	0	21.9	6.3E-07
9/27/2006	16	30.8	4	8.0	8.9	0	21.9	5.9E-07
9/27/2006	16	31.9	5	7.5	8.2	0	21.9	6.1E-07
9/27/2006	16	33.5	7	7.0	7.5	1	21.9	4.9E-07

Tested By: MCW Date: 9/27/2006 Checked By: GJM Date: 10-5-06

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DCN: CT-22A DATE:12-21-98 REVISION: 4\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-01 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22C)

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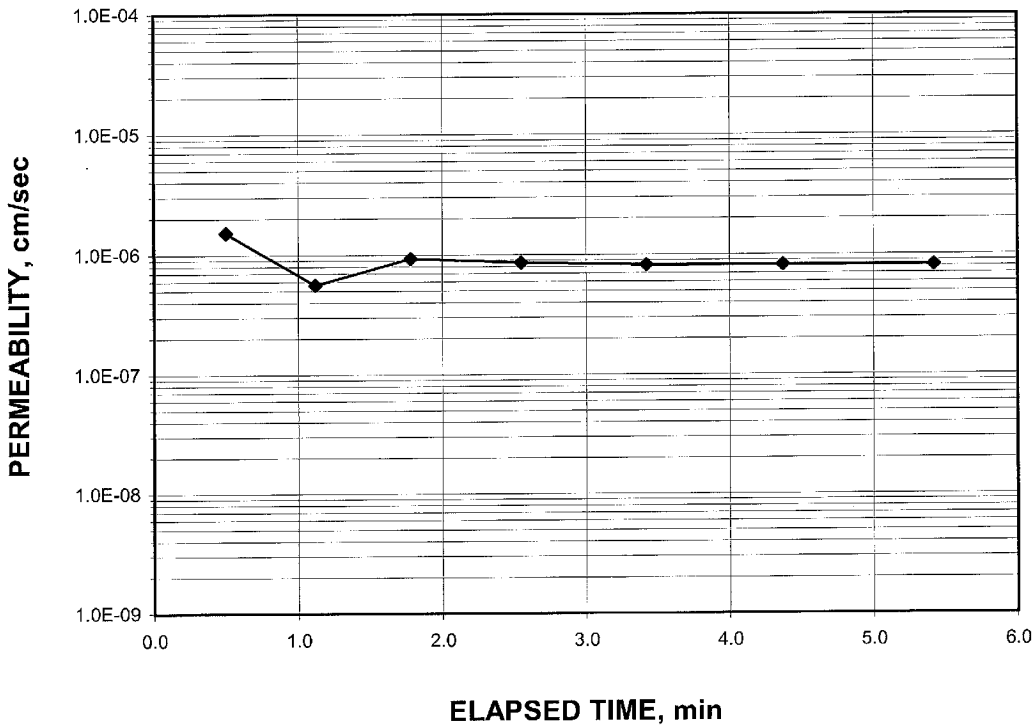
Client	MESCO	Boring No.	P3-9
Client Project	WAYNE CO. SUB D LF, PH 3	Depth (ft.)	9.5-9.8
Project No.	2006-615-02	Sample No.	N/A
Lab ID No.	2006-615-02-02		

Visual Description: LIGHT BROWN SANDY SILT

AVERAGE PERMEABILITY = 8.3E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 8.3E-09 m/sec @ 20°C

PERMEABILITY vs. TIME



Tested By: MCW Date: 9/27/2006 Checked By: GCM Date: 10·5·06

Page 1 of 3 DCN: CT-22A DATE:12-21-98 REVISION: 4 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-9
Client Project	WAYNE CO. SUB D LF, PH 3	Depth (ft.)	9.5-9.8
Project No.	2006-615-02	Sample No.	N/A
Lab ID No.	2006-615-02-02		

Specific Gravity	2.69	Measured
Sample Condition		Undisturbed

Visual Description: LIGHT BROWN SANDY SILT

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	305	Z-14
Wt. of Tare & WS (gm.)	206.14	469.11
Wt. of Tare & DS (gm.)	184.50	382.86
Wt. of Tare (gm.)	84.61	100.45
Wt. of Water (gm.)	21.64	86.25
Wt. of DS (gm.)	99.89	282.41
Moisture Content (%)	**21.7**	**30.5**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	1042.11	NA
Wt. of Tube (gm.)	269.84	NA
Wt. of WS (gm.)	772.27	828.62
Length 1 (in.)	3.760	3.614
Length 2 (in.)	3.745	3.556
Length 3 (in.)	3.748	3.720
Top Diameter (in.)	2.839	2.829
Middle Diameter (in.)	2.848	2.826
Bottom Diameter (in.)	2.836	2.913
Average Length (in.)	3.75	3.63
Average Area (in.^{2})	6.34	6.41
Sample Volume (cm^3)	389.66	381.08
Unit Wet Wt. (gm./ cm^3)	1.982	2.174
Unit Wet Wt. (pcf)	123.7	135.7
Unit Dry Wt. (pcf)	101.7	104.0
Unit Dry Wt. (gm./ cm^3)	1.629	1.666
Void Ratio, e	0.651	0.615
Porosity, n	0.394	0.381
Pore Volume (cm^3)	153.7	145.1

Tested By: MCW Date: 9/27/2006 Checked By: GBM Date: 10-5-06

Page 2 of 3 DCN: CT-22A DATE:12-21-98 REVISION: 4Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-9
Client Project	WAYNE CO. SUB D LF, PH 3	Depth (ft.)	9.5-9.8
Project No.	2006-615-02	Sample No.	N/A
Lab ID No.	2006-615-02-02		

Test Pressures		Final Sample Dimensions	
Cell Pressure(psi)	50.0	Sample Length (cm), L	9.22
Back Pressure(psi)	45.0	Sample Area (cm^2), A	41.33
Eff. Cons. Pressure(psi)	5.0	Pipette Area (cm^2), a_p	0.03142
Response (%)	98	Annulus Area (cm^2), a_a	0.76712
		Equilibrium Level (cm), R_{eq}	1.75

AVERAGE PERMEABILITY = 8.3E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 8.3E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	(min)	ELAPSED TIME t (min)	PIPETTE READING R_p (cm)	INCREMENT GRADIENT i (cm/cm)	FLOW CONDITION (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
9/27/2006	16	59.3	0	10.0	11.7	0	21.8	NA
9/27/2006	16	59.8	1	9.3	10.7	0	21.8	1.5E-06
9/27/2006	17	0.42	1	9.0	10.3	0	21.8	5.6E-07
9/27/2006	17	1.08	2	8.5	9.6	0	21.8	9.3E-07
9/27/2006	17	1.85	3	8.0	8.9	0	21.8	8.6E-07
9/27/2006	17	2.72	3	7.5	8.1	0	21.8	8.2E-07
9/27/2006	17	3.67	4	7.0	7.4	0	21.8	8.2E-07
9/27/2006	17	4.72	5	6.5	6.7	1	21.8	8.2E-07

Tested By: MCW Date: 9/27/2006 Checked By: GGM Date: 10-5-06

Page 3 of 3

DCN: CT-22A DATE:12-21-98 REVISION: 4\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-02-02 PERMOM.xls]Sheet1

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October 16, 2006

Project No. 2006-615-03

Mr. Jonathon Pfohl
Municipal Engineering Co.
P.O. Box 98
Garner, NC 27529

Transmittal
Laboratory Test Results
Wayne Co. Subtitle D Landfill Phase 3

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was faxed to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens which were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectively submitted,
Geotechnics, Inc.

Michael P. Smith
Regional Manager

We understand that you have a choice in your laboratory services and we thank you for choosing Geotechnics.

DCN: Data Transmittal Letter Date: 1/28/05 Rev.: 1

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MOISTURE CONTENT

ASTM D 2216 (SOP-S1)

Client	MESCO
Client Reference	WAYNE CO. SUB D LF, PH. 3
Project No.	2006-615-03

Lab ID	.001	.002
Boring No.	P3-2D	P3-13
Depth (ft)	8-9.18	28.5-30.5
Sample No.	NA	NA
Tare Number	216	210
Wt. of Tare & WS (gm)	349.86	271.98
Wt. of Tare & DS (gm)	316.23	253.43
Wt. of Tare (gm)	170.78	172.86
Wt. of Water (gm)	33.63	18.55
Wt. of DS (gm)	145.45	80.57
Water Content (%)	**23.1**	**23.0**

Notes : *NA*

Tested By *JBD* *Date* *10/12/2006* *Checked By* GZM *Date* 10-16-06

page 1 of 1 DCN: CT-S1 DATE 6-30-98 REVISION: 2 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03 WATCONT.XLS]Sheet1*

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SPECIFIC GRAVITY

ASTM D 854-00 (SOP - S5)

Client	MESCO	Boring No.	P3-2D
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-01	Visual Description	**PINK/TAN FAT CLAY**
			(Minus No.4 sieve material, airdried)

Replicate Number	**1**	**2**
Pycnometer ID	R 280	R 292
Weight of Pycnometer + Soil + Water (gm)	714.03	701.47
Temperature, T (°Celsius)	27.7	26.5
Weight of Pycnometer + Water (gm)	685.51	672.92
Tare Number	202	P12
Weight of Tare + Dry Soil (gm)	242.92	241.69
Weight of Tare (gm)	197.35	196.76
Weight of Dry Soil (gm)	45.57	44.93
Specific Gravity of Soil @ T	2.673	2.743
Specific Gravity of Water @ T	0.9963	0.9967
Conversion Factor for Temperature T	0.9981	0.9985
Specific Gravity @ 20° Celsius	2.678	2.747

Average Specific Gravity @ 20° Celsius	2.71

Tested By BP *Date* 10/9/2006 *Checked By* GEM *Date* GEM 10-10-06

DCN: CT-S5 Date: 03/24/05 Revision: 10R *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 Specific Gravity.xls]Sheet1*

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INTEGRITY IN TESTING

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	MESCO	Boring No.	P3-2D
Client Reference	WAYNE CO. SUB. D LF, PH 3	Depth (ft)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-01	Soil Description	**PINK/TAN FAT CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

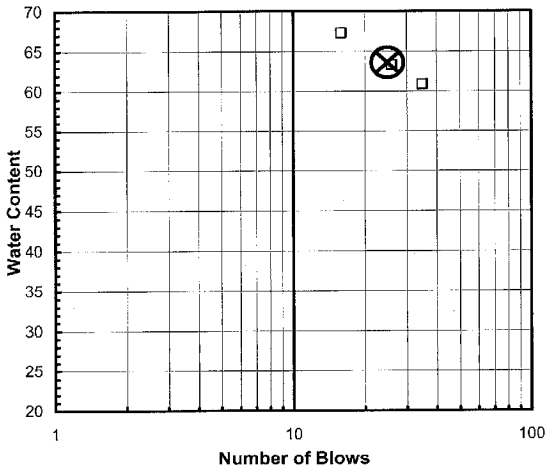
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	F	X	U	MULTIPOINT
Wt. of Tare & WS (gm)	29.53	33.26	33.92	
Wt. of Tare & DS (gm)	23.74	26.27	26.84	
Wt. of Tare (gm)	15.13	15.22	15.20	
Wt. of Water (gm)	5.8	7.0	7.1	
Wt. of DS (gm)	8.6	11.1	11.6	
Moisture Content (%)	**67.2**	**63.3**	**60.8**	
Number of Blows	**16**	**26**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	A-N	A-M	
Wt. of Tare & WS (gm)	22.70	23.01	
Wt. of Tare & DS (gm)	21.35	21.61	
Wt. of Tare (gm)	15.44	15.35	
Wt. of Water (gm)	1.4	1.4	
Wt. of DS (gm)	5.9	6.3	
Moisture Content (%)	**22.8**	**22.4**	**0.5**

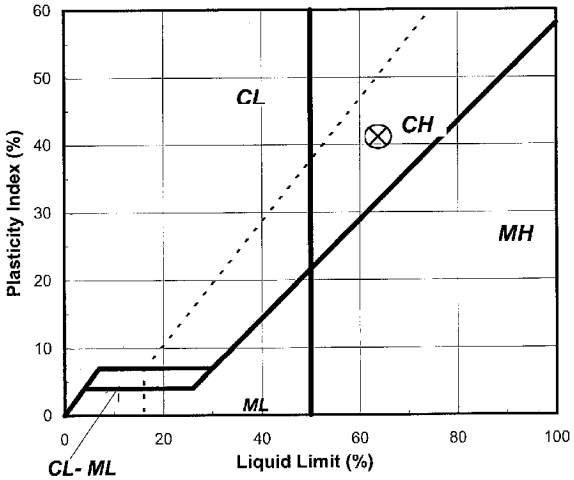
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**64**
Plastic Limit (%)	**23**
Plasticity Index (%)	**41**
USCS Symbol	**CH**

Flow Curve



Plasticity Chart



Tested By JGC *Date* 10/9/2006 *Checked By* GEM *Date* 10-10-06

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/2001 **REVISION:** 2

\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 LIMIT.xls]Sheet1

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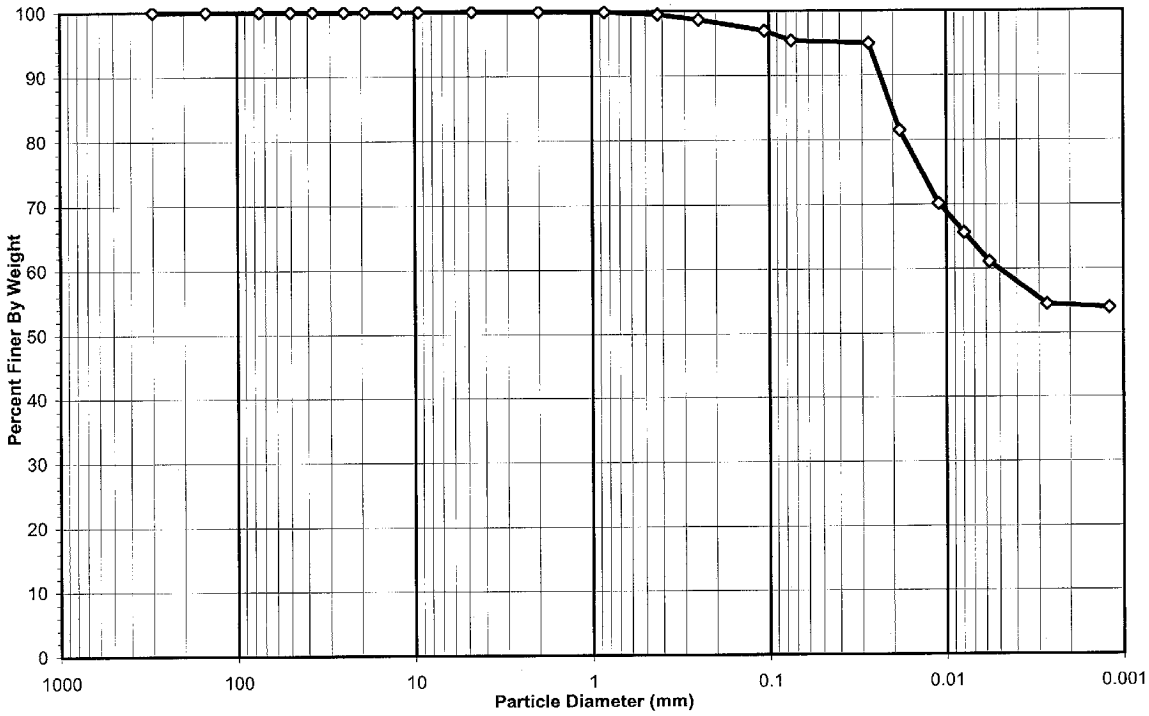
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-2D
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-01	Soil Color	**PINK/TAN**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay

12" 6" 3" 3/4" 3/8" #4 #10 #20 #40 #140 #200



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	4.63
Finer Than #200	*Silt & Clay*	95.37

USCS Symbol ***CH, TESTED***

USCS Classification *FAT CLAY*

page 1 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 SPLIT SIEVE.xls]Sheet1*

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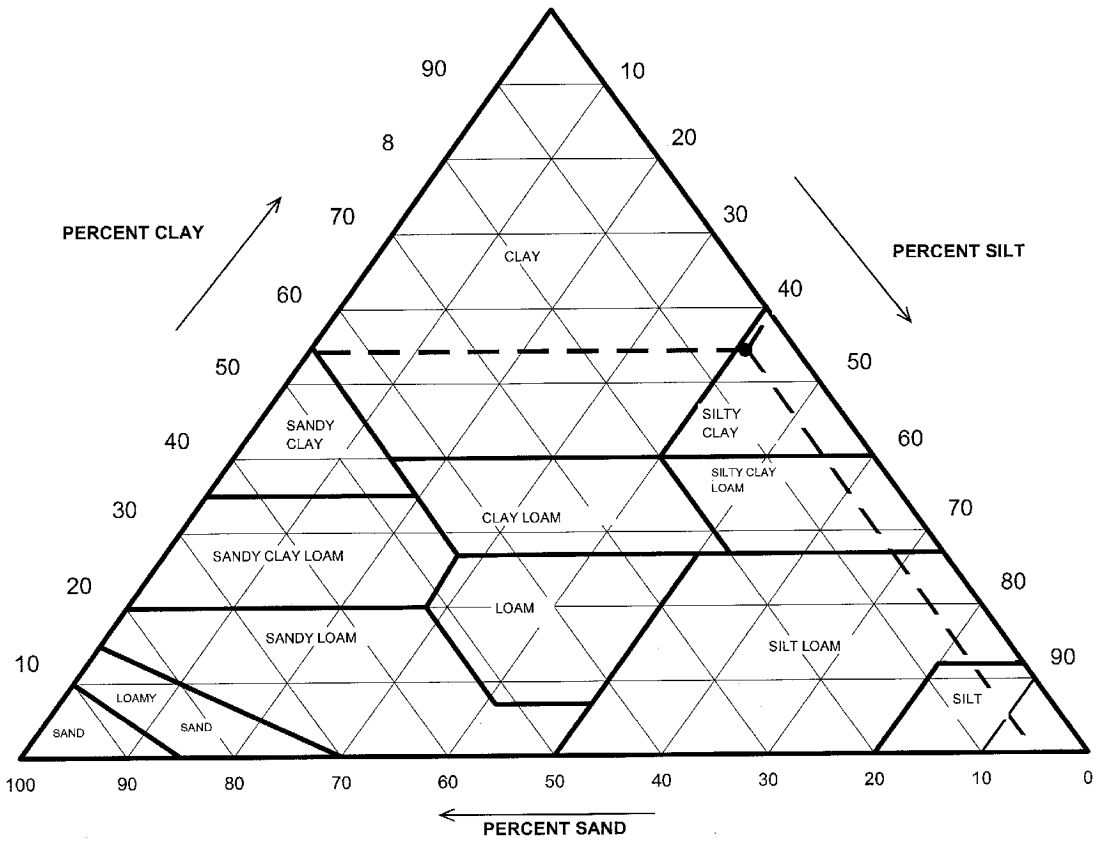
USDA CLASSIFICATION CHART

Client	MESCO	Boring No.	P3-2D
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-01	Soil Color	PINK/TAN



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	0.00	**0.00**
2	100.00	*Sand*	4.80	**4.80**
0.05	95.20	*Silt*	40.90	**40.90**
0.002	54.29	*Clay*	54.29	**54.29**

USDA Classification: ***SILTY CLAY***

page 2 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 SPLIT SIEVE.xls]Sheet1

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WASH SIEVE ANALYSIS #10 SPLIT

ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-2D
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-01	Soil Color	**PINK/TAN**

Moisture Content/sieve +10 Material		Moisture Content for Hydrometer Portion	
Tare No.	216	Tare No.	U-1
Wgt.Tare + Wet Soil (gm)	349.86	Wgt.Tare + Wet Soil (gm)	36.81
Wgt.Tare + Dry Soil (gm)	316.23	Wgt.Tare + Dry Soil (gm)	35.03
Weight of Tare (gm)	170.78	Weight of Tare (gm)	21.85
Weight of Water (gm)	33.63	Weight of Water (gm)	1.78
Weight of Dry Soil (gm)	145.45	Weight of Dry Soil (gm)	13.18
Moisture Content (%)	**23.1**	**Moisture Content (%)**	**13.5**

Soil Specimen Data			
Wet Weight +#10 Material (gm)	179.08	Weight of the Dry Sample (gm)	189.50
Dry Weight +#10 Material(gm)	145.5	Weight of minus #200 material (gm)	42.01
Wet Weight Hydro. Material.(gm)	50.00	Weight of plus #200 material (gm)	147.49
Dry Weight Hydro. Material (gm)	44.05		
Total Dry Weight Sample (gm)	189.50	**J-FACTOR (%FINER THAN #10)**	**1.0000**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.00	0.00	0.00	100.00	**100.00**
#20	0.85	0.04	0.09	0.09	99.91	**99.91**
#40	0.425	0.17	0.39	0.48	99.52	**99.52**
#60	0.250	0.37	0.84	1.32	98.68	**98.68**
#140	0.106	0.77	1.75	3.06	96.94	**96.94**
#200	0.075	0.69	1.57	4.63	95.37	**95.37**
Pan	-	42.01	95.37	100.00	-	-

Notes :

Tested By JBD Date 10/12/2006 Checked By GEM Date 10-16-06

page 3 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 SPLIT SIEVE.xls]Sheet1*

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HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-2D
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-01	Soil Color	**PINK/TAN**

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	47.0	47.0	21.0	4.67	42.3	94.9	0.01325	0.0275	**94.9**
5		41.0	21.0	4.67	36.3	81.5	0.01325	0.0183	**81.5**
15		36.0	20.8	4.72	31.3	70.1	0.01328	0.0111	**70.1**
30		34.0	20.7	4.75	29.2	65.6	0.01329	0.0079	**65.6**
60		32.0	20.7	4.75	27.2	61.1	0.01329	0.0057	**61.1**
280		29.0	20.9	4.70	24.3	54.5	0.01326	0.0027	**54.5**
1440		29.0	20.0	4.96	24.0	53.9	0.01340	0.0012	**53.9**

Soil Specimen Data		Other Corrections	
Tare + Dry Material (gm)	44.05	a - Factor	0.988
Weight of Tare (gm)	0		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 10	100.00
Weight of Dry Material (gm)	44.05		
		Specific Gravity	2.71 Measured

Note:

Tested By BD Date 10/12/2006 Checked By GEM Date 10-16-06

page 4 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 SPLIT SIEVE.xls]Sheet1*

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FLEXIBLE WALL PERMEABILITY TEST

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INTEGRITY IN TESTING

PERMOMETER METHOD

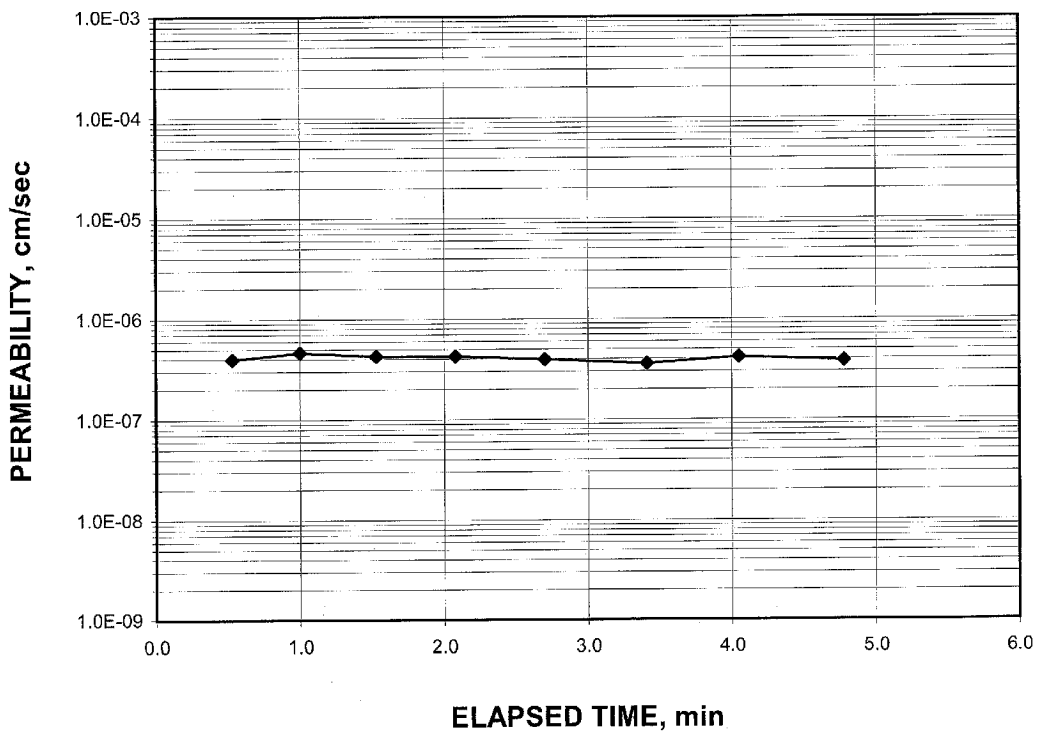
ASTM D 5084-97
(SOP-S22C)

Client	MESCO	Boring No.	P3-2D
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID No.	2006-615-03-01		

Visual Description: REDDISH WHITE FAT CLAY

AVERAGE PERMEABILITY = 3.9E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.9E-09 m/sec @ 20°C

PERMEABILITY vs. TIME



Tested By: MCW Date: 10/10/2006 Checked By: GM Date: 10-16-06

Page 1 of 3 DCN: CT-22A DATE:12-21-98 REVISION: 4 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-01 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

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INTEGRITY IN TESTING

PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-2D
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID No.	2006-615-03-01		

Specific Gravity	2.71	Measured
Sample Condition		Undisturbed

Visual Description: REDDISH WHITE FAT CLAY

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	306	313
Wt. of Tare & WS (gm.)	178.14	628.39
Wt. of Tare & DS (gm.)	159.63	515.56
Wt. of Tare (gm.)	88.11	110.71
Wt. of Water (gm.)	18.51	112.83
Wt. of DS (gm.)	71.52	404.85
Moisture Content (%)	**25.9**	**27.9**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	698.29	NA
Wt. of Tube (gm.)	179.79	NA
Wt. of WS (gm.)	518.50	526.69
Length 1 (in.)	2.548	2.540
Length 2 (in.)	2.484	2.531
Length 3 (in.)	2.574	2.586
Top Diameter (in.)	2.823	2.845
Middle Diameter (in.)	2.846	2.852
Bottom Diameter (in.)	2.829	2.846
Average Length (in.)	2.54	2.55
Average Area (in.^{2})	6.30	6.37
Sample Volume (cm^3)	261.83	266.38
Unit Wet Wt. (gm./ cm^3)	1.980	1.977
Unit Wet Wt. (pcf)	123.6	123.4
Unit Dry Wt. (pcf)	98.2	96.5
Unit Dry Wt. (gm./ cm^3)	1.573	1.546
Void Ratio, e	0.723	0.753
Porosity, n	0.419	0.429
Pore Volume (cm^3)	109.8	114.4

Tested By: MCW Date: 10/10/2006 Checked By: GEM Date: 10-16-06

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-2D
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	8-9.18
Project No.	2006-615-03	Sample No.	NA
Lab ID No.	2006-615-03-01		

Test Pressures		Final Sample Dimensions	
Cell Pressure(psi)	40.0	Sample Length (cm), L	6.48
Back Pressure(psi)	35.0	Sample Area (cm^2), A	41.09
Eff. Cons. Pressure(psi)	5.0	Pipette Area (cm^2), a_p	0.03142
Response (%)	95	Annulus Area (cm^2), a_a	0.76712
		Equilibrium Level (cm), R_{eq}	1.75

AVERAGE PERMEABILITY = 3.9E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.9E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (min)	PIPETTE READING R_p (cm)	INCREMENT GRADIENT i (cm/cm)	FLOW CONDITION (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
10/10/2006	16	3.9	0	10.5	17.6	0	22.1	NA
10/10/2006	16	4.5	1	10.2	17.0	0	22.1	4.0E-07
10/10/2006	16	4.9	1	9.9	16.4	0	22.1	4.6E-07
10/10/2006	16	5.5	2	9.6	15.8	0	22.1	4.3E-07
10/10/2006	16	6	2	9.3	15.2	0	22.1	4.3E-07
10/10/2006	16	6.6	3	9.0	14.6	0	22.1	3.9E-07
10/10/2006	16	7.3	3	8.7	14.0	0	22.1	3.6E-07
10/10/2006	16	8	4	8.4	13.4	0	22.1	4.1E-07
10/10/2006	16	8.7	5	8.1	12.8	1	22.1	3.8E-07

Tested By: MCW Date: 10/10/2006 Checked By: GEM Date: 10-16-06

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INTEGRITY IN TESTING

SPECIFIC GRAVITY

ASTM D 854-00 (SOP - S5)

Client	MESCO	Boring No.	P3-13
Client Reference	WAYNE CO. SUB D LF, PH. 3	Depth (ft)	28.5-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-02	Visual Description	**DARK GRAY CLAYEY SAND** (MInus No.4 sieve material, airdried)

Replicate Number	**1**	**2**
Pycnometer ID	R 280	R 242
Weight of Pycnometer + Soil + Water (gm)	716.79	701
Temperature, T (°Celsius)	24.6	24.5
Weight of Pycnometer + Water (gm)	685.51	670.40
Tare Number	200	214
Weight of Tare + Dry Soil (gm)	220.64	219.32
Weight of Tare (gm)	171.82	171.32
Weight of Dry Soil (gm)	48.82	48.00
Specific Gravity of Soil @ T	2.783	2.758
Specific Gravity of Water @ T	0.9972	0.9972
Conversion Factor for Temperature T	0.9990	0.9990
Specific Gravity @ 20° Celsius	2.786	2.761

Average Specific Gravity @ 20° Celsius	2.77

Tested By BD *Date* 10/13/2006 *Checked By* GEM *Date* 10-16-06

DCN: CT-S5 Date: 03/24/05 Revision: 10R *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-02 Specific Gravity.xls]Sheet1*

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INTEGRITY IN TESTING

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	MESCO	Boring No.	P3-13
Client Reference	WAYNE CO. SUB. D LF, PH 3	Depth (ft)	28.5
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-02	Soil Description	**BLACK SILT**

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

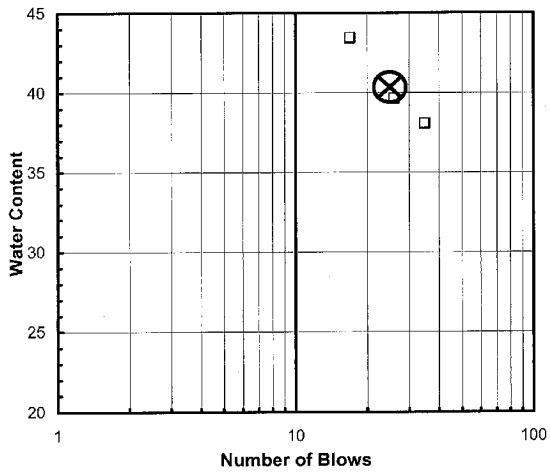
Liquid Limit Test	**1**	**2**	**3**	
Tare Number	T	K	O	MULTIPOINT
Wt. of Tare & WS (gm)	31.03	31.04	34.08	
Wt. of Tare & DS (gm)	26.25	26.55	28.88	
Wt. of Tare (gm)	15.24	15.22	15.21	
Wt. of Water (gm)	4.8	4.5	5.2	
Wt. of DS (gm)	11.0	11.3	13.7	
Moisture Content (%)	**43.4**	**39.6**	**38.0**	
Number of Blows	**17**	**26**	**35**	

Plastic Limit Test	**1**	**2**	**Range**
Tare Number	P	E	
Wt. of Tare & WS (gm)	21.67	22.61	
Wt. of Tare & DS (gm)	20.32	21.07	
Wt. of Tare (gm)	15.22	15.30	
Wt. of Water (gm)	1.4	1.5	
Wt. of DS (gm)	5.1	5.8	
Moisture Content (%)	**26.5**	**26.7**	**-0.2**

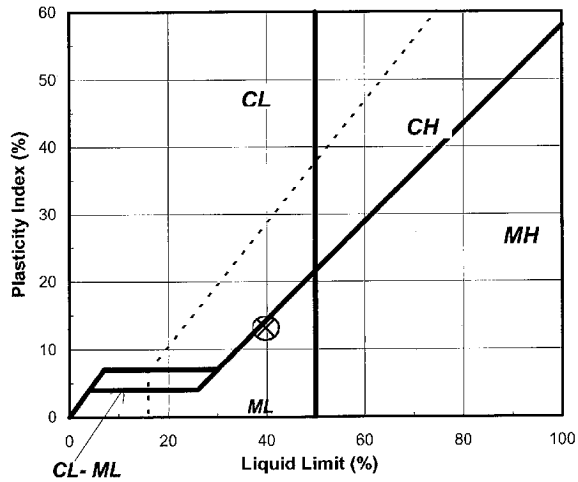
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**40**
Plastic Limit (%)	**27**
Plasticity Index (%)	**13**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



Tested By JGC *Date* 10/10/2006 *Checked By* GZM *Date* 10-11-06

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/2001 **REVISION:** 2

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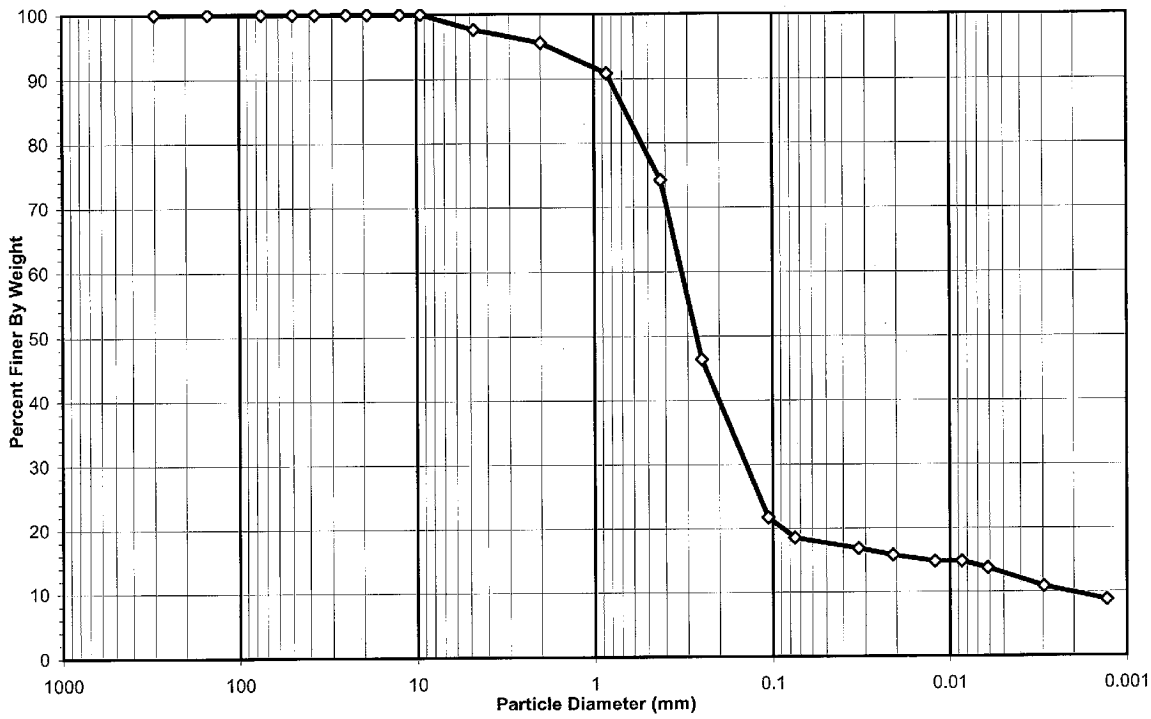
INTEGRITY IN TESTING

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-13
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	28.5-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-02	Soil Color	**DARK GRAY**

	SIEVE ANALYSIS					*HYDROMETER*
USCS	**cobbles**	**gravel**	**sand**			**silt and clay fraction**
USDA	**cobbles**	**gravel**	**sand**		**silt**	**clay**

12" 6" 3" 3/4" 3/8" #4 #10 #20 #40 #140 #200



USCS Summary

Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	2.36
#4 To #200	*Sand*	79.12
Finer Than #200	*Silt & Clay*	18.52

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND***

page 1 of 4 **DCN: CT-S3P DATE:02/15/05 REVISION:8** *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-02 SPLIT SIEVE.xls]Sheet1*

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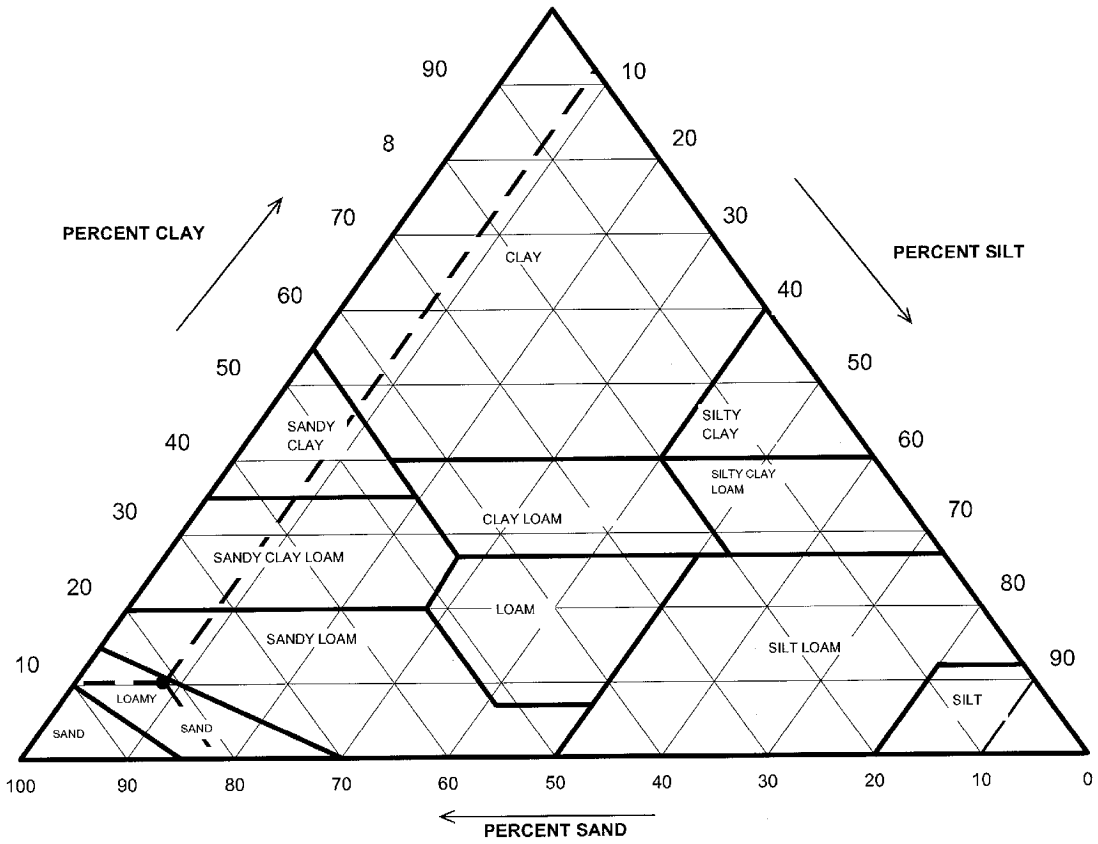
USDA CLASSIFICATION CHART

Client	MESCO	Boring No.	P3-13
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	28.5-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-02	Soil Color	DARK GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	4.42	**0.00**
2	95.58	*Sand*	77.90	**81.50**
0.05	17.68	*Silt*	7.82	**8.19**
0.002	9.86	*Clay*	9.86	**10.31**

USDA Classification: ***LOAMY SAND***

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INTEGRITY IN TESTING

WASH SIEVE ANALYSIS #10 SPLIT

ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-13
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	28.5-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-02	Soil Color	**DARK GRAY**

Moisture Content/sieve +10 Material		Moisture Content for Hydrometer Portion	
Tare No.	210	Tare No.	F-1
Wgt.Tare + Wet Soil (gm)	271.98	Wgt.Tare + Wet Soil (gm)	36.97
Wgt.Tare + Dry Soil (gm)	253.43	Wgt.Tare + Dry Soil (gm)	36.43
Weight of Tare (gm)	172.86	Weight of Tare (gm)	21.98
Weight of Water (gm)	18.55	Weight of Water (gm)	0.54
Weight of Dry Soil (gm)	80.57	Weight of Dry Soil (gm)	14.45
Moisture Content (%)	**23.0**	**Moisture Content (%)**	**3.7**

Soil Specimen Data			
Wet Weight +#10 Material (gm)	99.12	Weight of the Dry Sample (gm)	176.97
Dry Weight +#10 Material(gm)	80.6	Weight of minus #200 material (gm)	18.68
Wet Weight Hydro. Material.(gm)	100.00	Weight of plus #200 material (gm)	158.29
Dry Weight Hydro. Material (gm)	96.40		
Total Dry Weight Sample (gm)	176.97	**J-FACTOR (%FINER THAN #10)**	**0.9558**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	1.90	2.36	2.36	97.64	**97.64**
#10	2.00	1.66	2.06	4.42	95.58	**95.58**
#20	0.85	4.80	4.98	4.98	95.02	**90.82**
#40	0.425	16.75	17.38	22.36	77.64	**74.21**
#60	0.250	28.06	29.11	51.46	48.54	**46.39**
#140	0.106	24.90	25.83	77.29	22.71	**21.70**
#200	0.075	3.21	3.33	80.62	19.38	**18.52**
Pan	-	18.68	19.38	100.00	-	**-**

Notes :

Tested By JBD Date 10/12/2006 Checked By GDM Date 10-16-06

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HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	MESCO	Boring No.	P3-13
Client Reference	WAYNE CO SUB D LF. PH.3	Depth (ft)	28.5-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID	2006-615-03-02	Soil Color	**DARK GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	22.0	22.0	21.1	4.64	17.4	17.6	0.01300	0.0328	**16.8**
5		21.0	20.9	4.70	16.3	16.5	0.01303	0.0209	**15.8**
15		20.0	20.9	4.70	15.3	15.5	0.01303	0.0121	**14.8**
30		20.0	20.8	4.72	15.3	15.5	0.01305	0.0086	**14.8**
60		19.0	20.6	4.78	14.2	14.4	0.01308	0.0061	**13.8**
268		16.0	20.6	4.78	11.2	11.4	0.01308	0.0030	**10.9**
1440		14.0	20.0	4.96	9.0	9.2	0.01318	0.0013	**8.7**

Soil Specimen Data		**Other Corrections**	
Tare + Dry Material (gm)	96.40	a - Factor	0.976
Weight of Tare (gm)	0		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 10	95.58
Weight of Dry Material (gm)	96.40		
		Specific Gravity	2.77 Measured

Note:

Tested By JBD Date 10/12/2006 Checked By GZM Date 10-16-06

page 4 of 4 DCN: CT-S3P DATE:02/15/05 REVISION:8 *\\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-02 SPLIT SIEVE.xls]Sheet1*

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

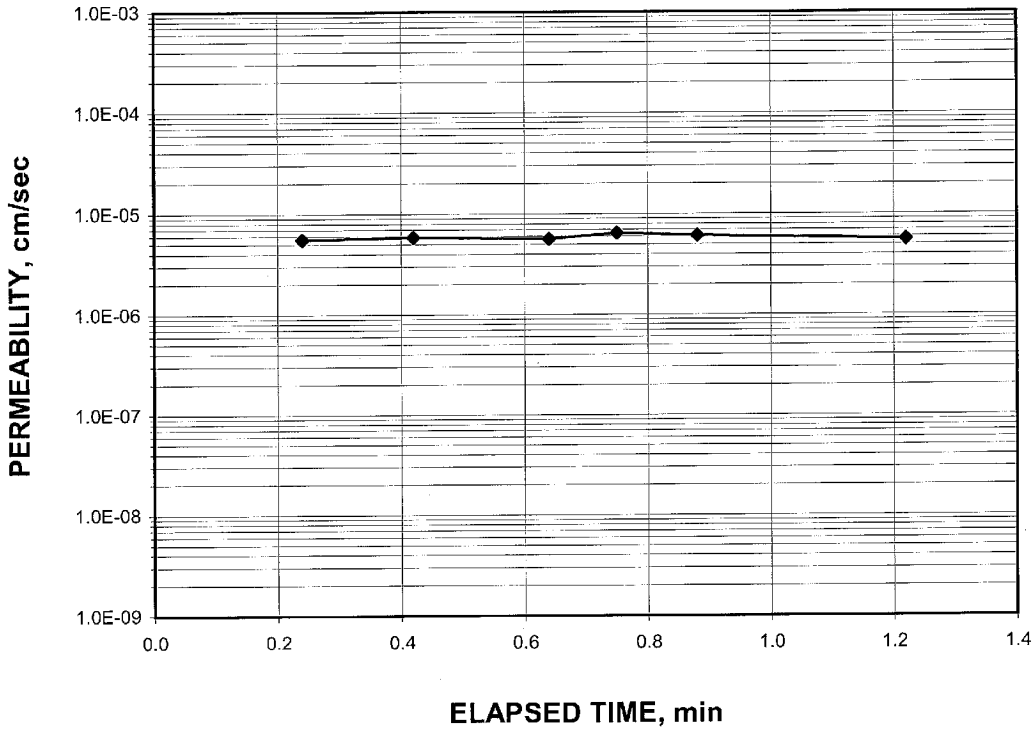
ASTM D 5084-97
(SOP-S22C)

Client	MESCO	Boring No.	P3-13
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	29.2-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID No.	2006-615-03-02		

Visual Description: BLACKISH GRAY SILTY SAND

AVERAGE PERMEABILITY = 5.9E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.9E-08 m/sec @ 20°C

PERMEABILITY vs. TIME



Tested By: MCW Date: 10/10/2006 Checked By: GCM Date: 10-16-06

Page 1 of 3 DCN: CT-22A DATE:12-21-98 REVISION: 4 \\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-02 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

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PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-13
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	29.2-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID No.	2006-615-03-02		

Specific Gravity 2.77 Measured
Sample Condition Undisturbed

Visual Description: BLACKISH GRAY SILTY SAND

NOTE: BLACK GRAY SANDY MATERIAL SOIL HORIZON WAS FOUND TO BE APPROXIMATELY BETWEEN 29.2-30.5' WITHIN SHELBY TUBE

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	210	308
Wt. of Tare & WS (gm.)	271.98	685.7
Wt. of Tare & DS (gm.)	253.43	515.15
Wt. of Tare (gm.)	172.86	110.91
Wt. of Water (gm.)	18.55	170.55
Wt. of DS (gm.)	80.57	404.24
Moisture Content (%)	**23.0**	**42.2**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	566.58	NA
Wt. of Tube (gm.)	0.00	NA
Wt. of WS (gm.)	566.58	654.85
Length 1 (in.)	3.253	3.103
Length 2 (in.)	3.264	3.066
Length 3 (in.)	3.157	3.040
Top Diameter (in.)	2.873	2.863
Middle Diameter (in.)	2.890	2.876
Bottom Diameter (in.)	2.878	2.890
Average Length (in.)	3.22	3.07
Average Area (in.^{2})	6.52	6.50
Sample Volume (cm^3)	344.32	326.86
Unit Wet Wt. (gm./ cm^3)	1.646	2.003
Unit Wet Wt. (pcf)	102.7	125.1
Unit Dry Wt. (pcf)	83.5	88.0
Unit Dry Wt. (gm./ cm^3)	1.338	1.409
Void Ratio, e	1.071	0.966
Porosity, n	0.517	0.491
Pore Volume (cm^3)	178.1	160.6

Tested By: MCW Date: 10/10/2006 Checked By: GZM Date: 10-16-06

Page 2 of 3 DCN: CT-22A DATE:12-21-98 REVISION: 4\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-02 PERMOM.xls]Sheet1

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FLEXIBLE WALL PERMEABILITY TEST

geotechnics INTEGRITY IN TESTING

PERMOMETER METHOD

ASTM D 5084-97
(SOP-S22A & B)

Client	MESCO	Boring No.	P3-13
Client Project	WAYNE CO. SUB D LF, PH. 3	Depth (ft.)	29.2-30.5
Project No.	2006-615-03	Sample No.	NA
Lab ID No.	2006-615-03-02		

Test Pressures		Final Sample Dimensions	
Cell Pressure(psi)	40.0	Sample Length (cm), L	7.80
Back Pressure(psi)	35.0	Sample Area (cm^2), A	41.92
Eff. Cons. Pressure(psi)	5.0	Pipette Area (cm^2), a_p	0.03142
Response (%)	97	Annulus Area (cm^2), a_a	0.76712
		Equilibrium Level (cm), R_{eq}	1.75

AVERAGE PERMEABILITY = 5.9E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.9E-08 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	(min)	ELAPSED TIME t (min)	PIPETTE READI NG R_p (cm)	INCREMENT GRADIENT i (cm/cm)	FLOW CONDITION (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
10/10/2006	15	9.28	0	10.5	14.7	0	22.1	NA
10/10/2006	15	9.52	0	9.0	12.1	0	22.1	5.6E-06
10/10/2006	15	9.7	0	8.0	10.5	0	22.1	5.8E-06
10/10/2006	15	9.92	1	7.0	8.8	0	22.1	5.6E-06
10/10/2006	15	10	1	6.5	8.0	0	22.1	6.5E-06
10/10/2006	15	10.2	1	6.0	7.1	0	22.1	6.1E-06
10/10/2006	15	10.5	1	5.0	5.4	1	22.1	5.6E-06

Tested By: MCW Date: 10/10/2006 Checked By: GEM Date: 10-16-06

Page 3 of 3 DCN: CT-22A DATE:12-21-98 REVISION: X:\Lab1\c\2006 PROJECTS\2006-615 MESCO\[2006-615-03-02 PERMOM.xls]Sheet1

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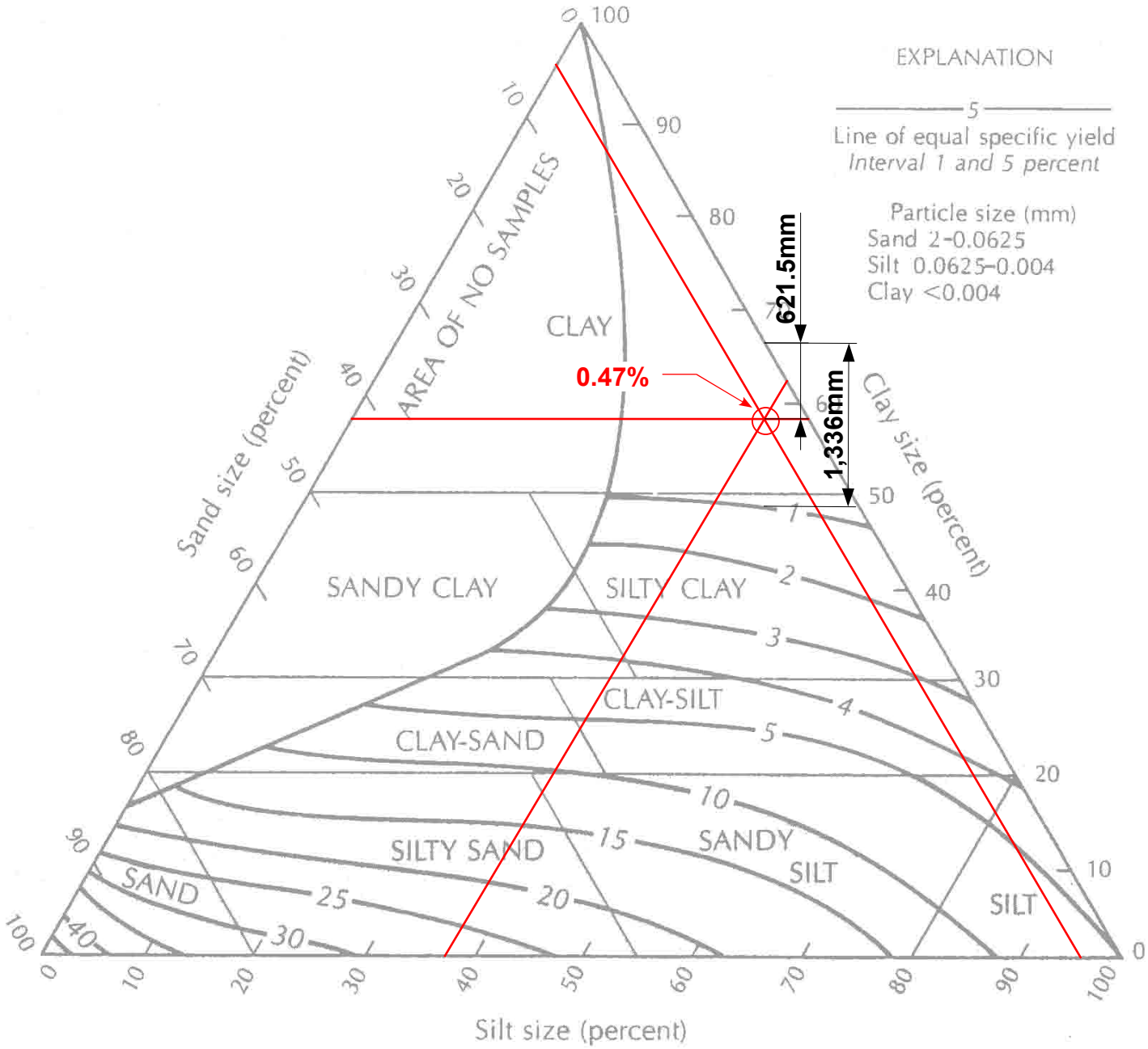
Figure B-1: Calculation of effective porosity from re-calculated grain size distribution, P3-2D 8-9.18'



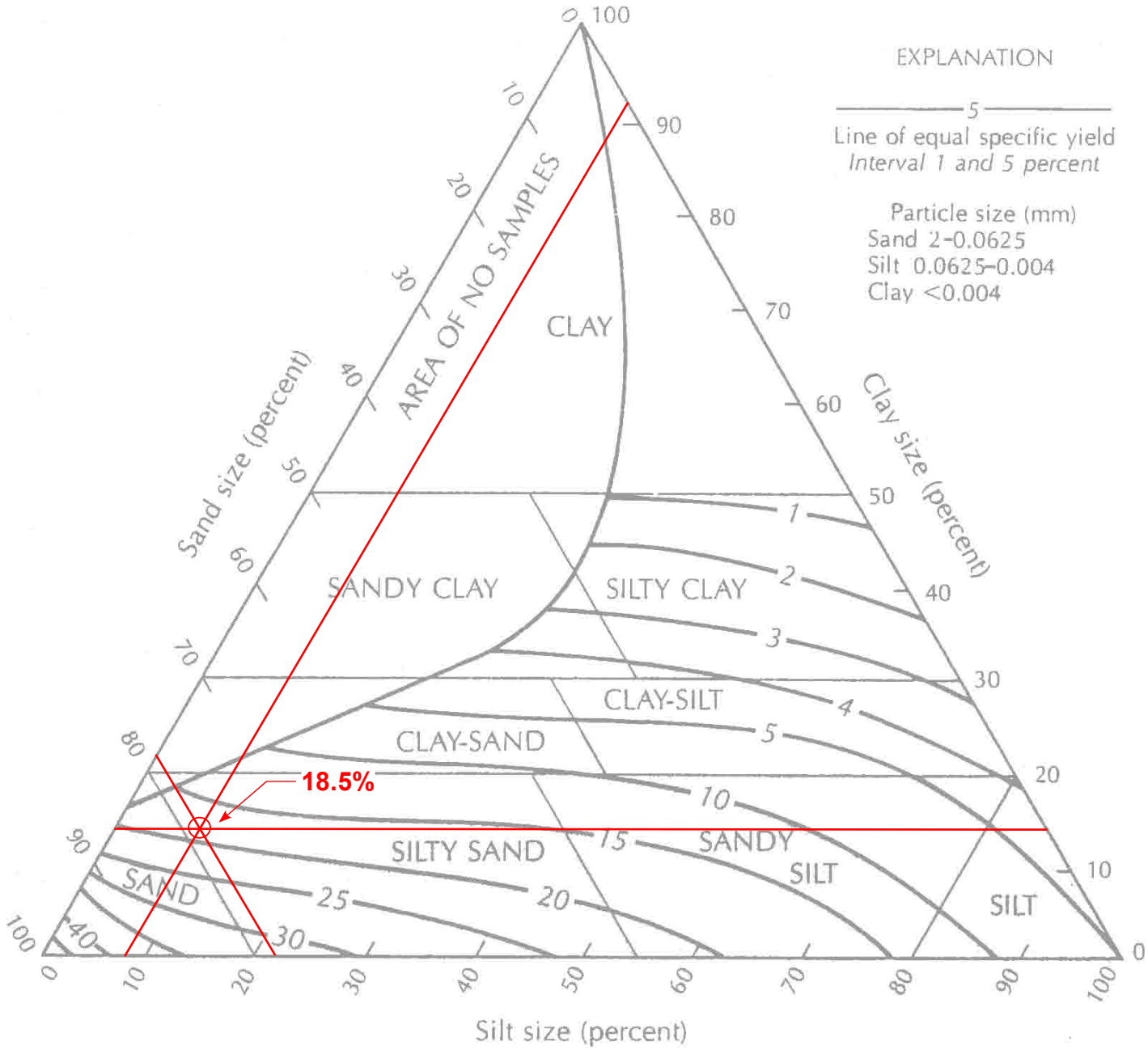
P3-2D 8-9.18'

Soil Type	Proportion (%)
Sand	4.7%
Silt	37.3%
Clay	58.0%

AGU Soil Classification
Clay

Effective Porosity
n_e = 0.47%

Figure B-2: Calculation of effective porosity from re-calculated grain size distribution, P3-4 8-9.38'



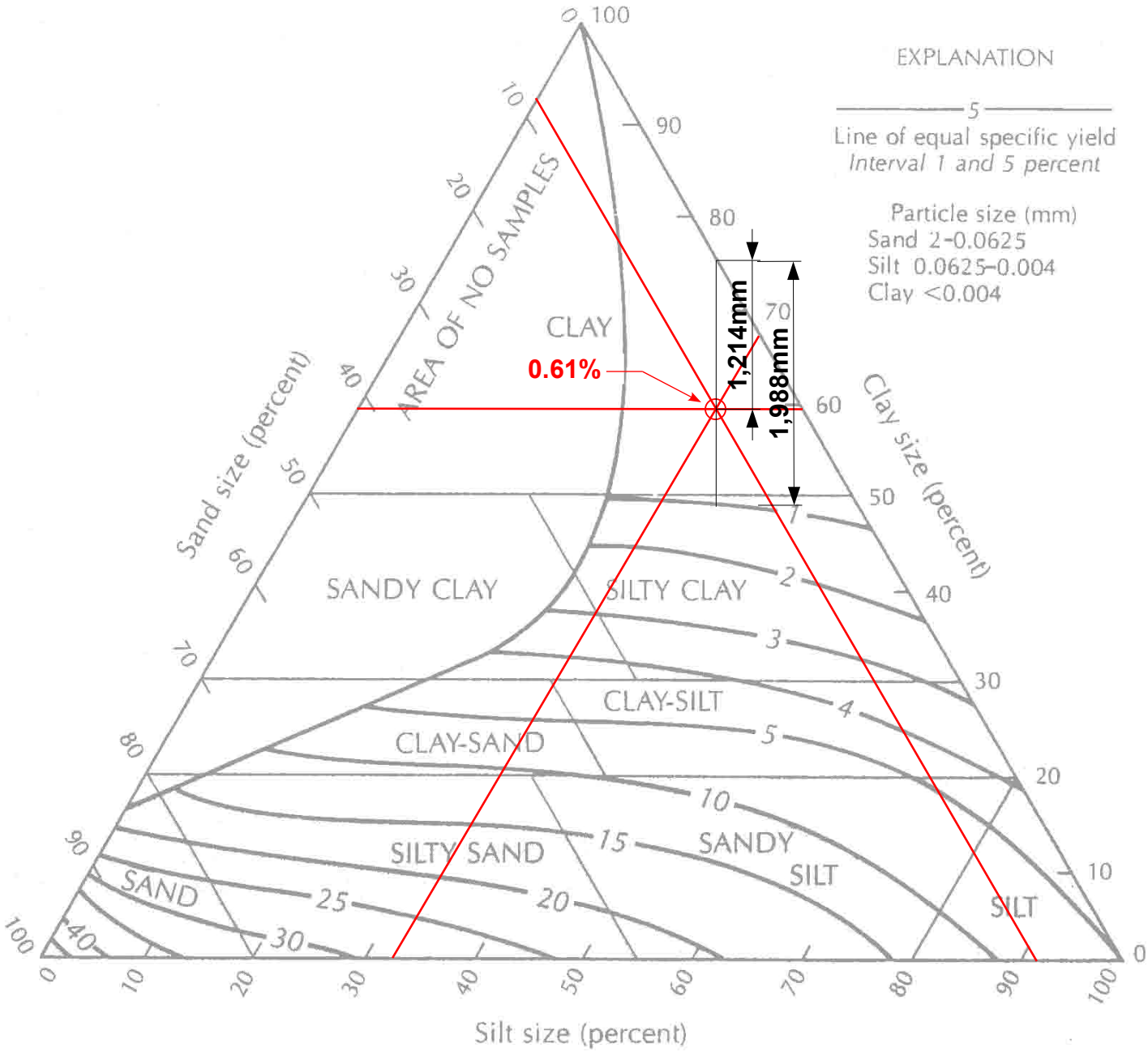
P3-4 8-9.38'

Soil Type	Proportion (%)
Sand	78.1%
Silt	8.2%
Clay	13.8%

AGU Soil Classification
Silty Sand

Effective Porosity
n_e=18.5%

Figure B-3: Calculation of effective porosity from re-calculated grain size distribution, P3-9 3-4.92'



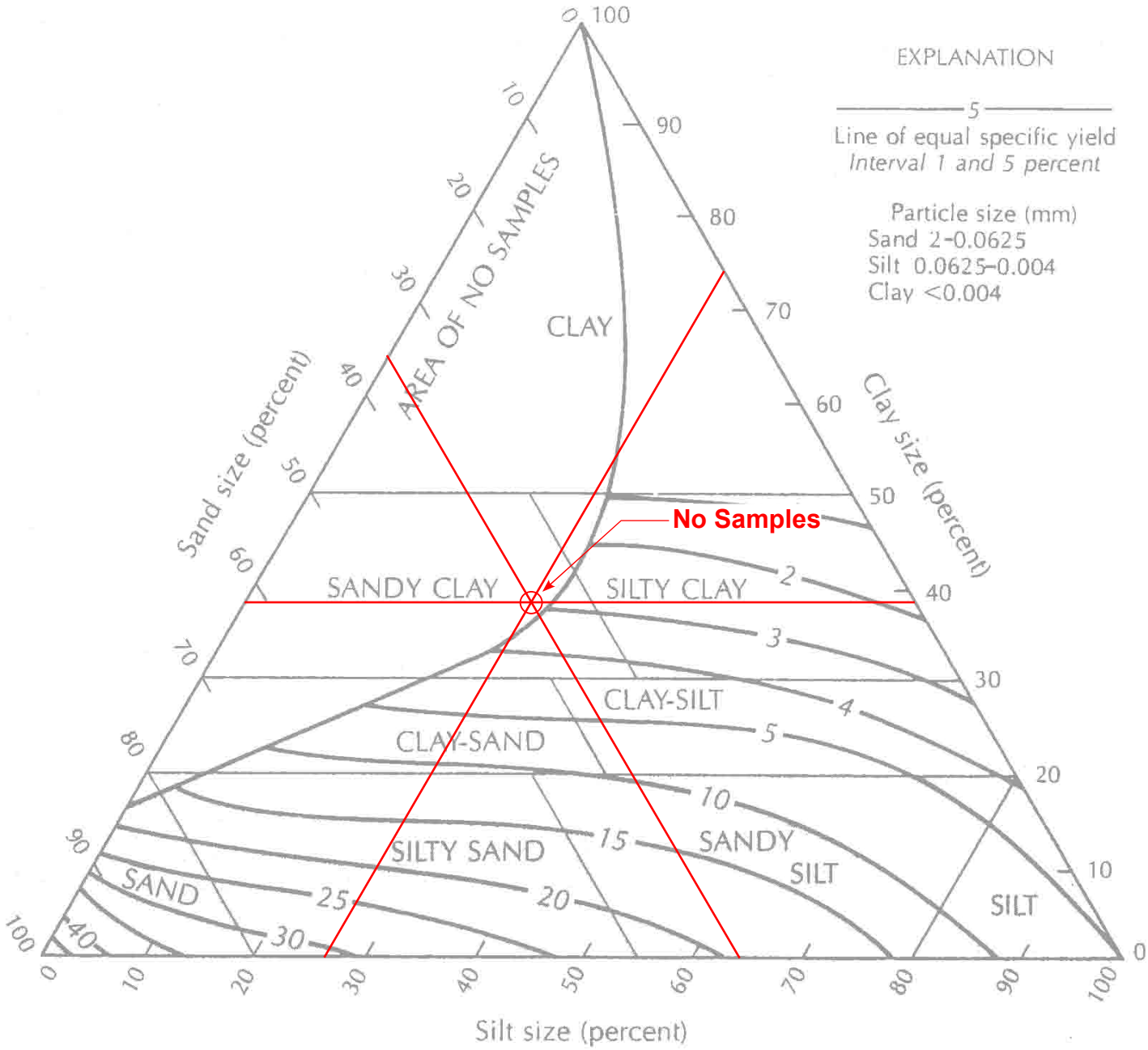
P3-9 3-4.92'

Soil Type	Proportion (%)
Sand	8.0%
Silt	32.4%
Clay	59.6%

AGU Soil Classification
Clay

Effective Porosity
n_e=0.61%

Figure B-4: Calculation of effective porosity from re-calculated grain size distribution, P3-9 9-10.17'



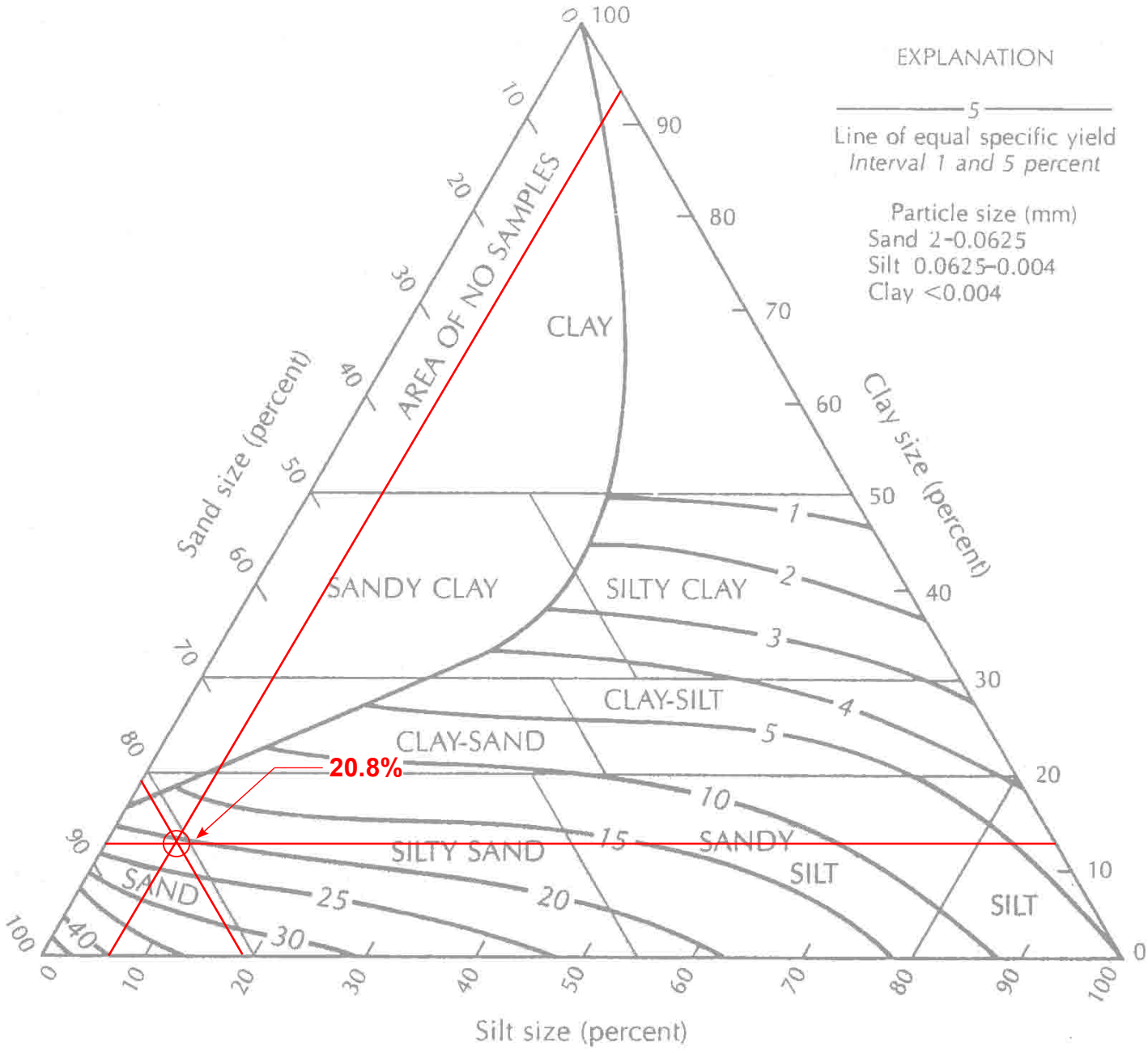
P3-9 9-10.17'

Soil Type	Proportion (%)
Sand	35.0%
Silt	26.7%
Clay	38.3%

AGU Soil Classification
Sandy Clay

Effective Porosity
N/A

Figure B-5: Calculation of effective porosity from re-calculated grain size distribution, P3-13 28.5-30.5'



P3-13 28.5-30.5'

Soil Type	Proportion (%)
Sand	81.9%
Silt	6.1%
Clay	12.1%

AGU Soil Classification
Sand

Effective Porosity
n_e=20.8%

APPENDIX C

Table C-1: Slug Test Summary

	Test Date	Initial Head Change (ft)	Depth to Top of Sand Pack (ft) BTOP	Depth to Top of Screen (ft) BTOP	Initial Depth to Water (ft) BTOP	K (cm/sec)	Test Method	Lithology
P3-1	03/07/2007	5.13	12.63	13.66	14.41	1.10E-03	Rising Head	Silty Sand
P3-2S	02/20/2007	7.25	14.13	15.13	17.83	2.08E-03	Rising Head	Silty Sand
P3-2D	12/12/2006	9.58	50.26	51.31	18.14	1.88E-04	Falling Head	Sandy Clay
P3-3	02/21/2007	6.36	6.81	7.80	8.81	1.11E-03	Rising Head	Silty Sand
P3-4	02/21/2007	3.31	6.97	7.80	5.71	3.18E-04	Falling Head	Silty Sand
P3-5	02/20/2007	3.30	6.80	8.50	5.23	1.57E-03	Falling Head	Silty Sand
P3-6S	02/20/2007	3.64	11.40	12.74	5.07	5.75E-04	Falling Head	Silty Sand
P3-6D	02/20/2007	5.41	33.94	34.98	5.81	2.83E-04	Rising Head	Silty Sand with Clay
P3-7	02/21/2007	4.08	7.56	9.89	6.96	7.92E-04	Falling Head	Silty Sand
P3-8	02/20/2007	3.98	7.43	8.72	4.32	4.61E-04	Falling Head	Silty Sand
P3-9	02/21/2007	3.74	7.58	8.75	3.73	1.06E-04	Falling Head	Silty Sand
P3-10S	12/12/2006	4.56	8.40	9.37	6.05	4.29E-04	Falling Head	Silty Sand
P3-10D	12/12/2006	6.07	31.11	32.30	6.81	2.87E-04	Falling Head	Silty Sand with Clay
P3-11S	02/21/2007	4.40	9.20	10.23	4.74	5.47E-04	Falling Head	Silty Sand
P3-11D	02/21/2007	4.61	35.51	36.43	4.92	3.99E-04	Falling Head	Silty Sand with Clay
P3-12	03/07/2007	4.70	10.13	11.31	4.14	1.63E-04	Falling Head	Silty Sand
P3-13	04/18/2007	3.90	7.16	13.16	4.03	9.20E-05	Falling Head	Silty Sand with Clay
P3-14	12/12/2006	4.43	8.51	9.57	13.95	9.67E-04	Rising Head	Silty Sand
P3-15S	12/12/2006	5.67	8.59	9.62	9.57	6.55E-03	Rising Head	Silty Sand
P3-15D	12/12/2006	8.02	26.76	27.55	9.35	7.79E-05	Falling Head	Silty Sand with Clay
P3-16	02/21/2007	6.00	8.08	9.07	7.16	2.63E-04	Falling Head	Silty Sand
P3-17	02/21/2007	5.92	7.45	9.00	6.72	2.24E-04	Falling Head	Silty Sand
P3-18S	03/07/2007	10.19	7.83	8.90	2.31	1.82E-05	Falling Head	Silty Sand

Table C-1: Slug Test Summary

Summary Statistics			
Geometric Mean (GM)	3.87E-04	Count	23
Geo. Std. Deviation (GSD)	3.48	Minimum	1.82E-5
GM / GSD	1.11E-04	Maximum	5.20E-7
GM * GSD	1.35E-03		
Silty Sand/Sandy Silt			
Geometric Mean (GM)	4.54E-04	Count	18
Geo. Std. Deviation (GSD)	3.98	Minimum	1.82E-5
GM / GSD	1.14E-04	Maximum	6.55E-3
GM * GSD	1.81E-03		
Confining Layer/Clay			
Geometric Mean (GM)	2.16E-04	Count	5
Geo. Std. Deviation (GSD)	1.88	Minimum	7.79E-5
GM / GSD	1.15E-04	Maximum	3.99E-4
GM * GSD	4.06E-04		

NOTES:

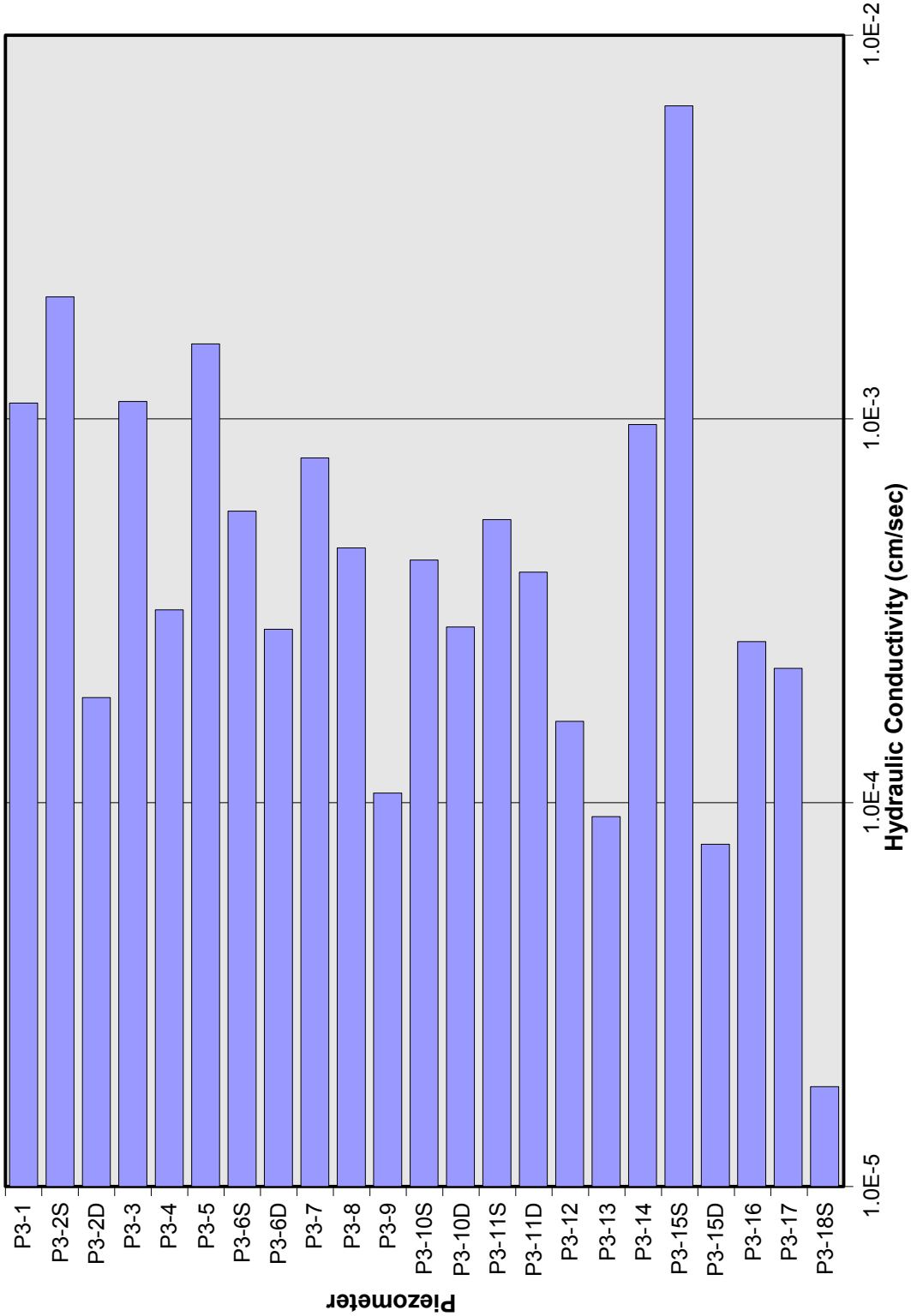
1. The Bouwer & Rice method was used for all slug test calculations performed (see Section 4.4.2 for the details of the method).

2. Initial head change refers to the maximum displacement from the initial static water level caused by prior pump pumping, Falling Head, or other method to perturb the initial condition.

3. The value of K represents the hydraulic conductivity derived from slug test data. All slug test data is included in this appendix.

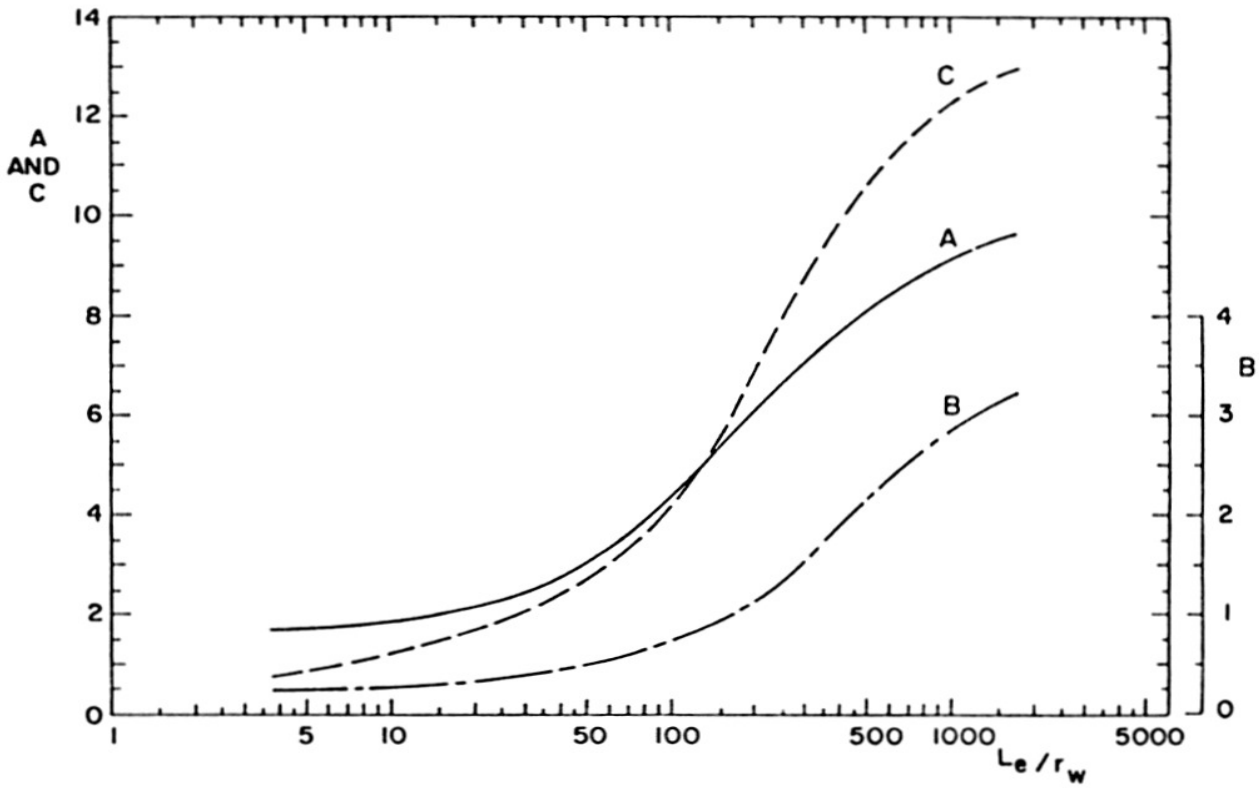
4. The *Lithology* column gives a description of the dominant soil or rock type within the perforated section of the piezometer.

5. *Falling Head* tests performed by injection of water into well to create an initial head change; *Rising Head* tests performed by removal of water to create an initial head change.



Graph C-1: Hydraulic Conductivity at Piezometer Locations

Figure C-1: Bouwer & Rice shape curve depicting empirical relationships between parameters *A, B* and *C*, and L_e/r_w (excerpted from Bouwer, 1989)



While the relationships presented in the above graph are derived via electrical resistance network simulations, they can be approximated by the following expressions that were determined by regression analysis. Let X = Log(L_e/r_w), then

$A=\{$	$1.638445671 + 0.166908063X + 0.000740459e^{6.1710528X - 1.054747686X^2}$	$(X < 2.554422663)$
	$11.00393028 - 170.7752217e^{-1.509639982X}$	$(X \geq 2.554422663)$

$B=\{$	$0.174811819 + 0.060059188X + 0.007965502e^{2.05337686X - 0.007790328X^2}$	$(X < 2.596774459)$
	$4.133124586 - 93.06136936e^{-1.43537099X}$	$(X \geq 2.596774459)$

$C=\{$	$0.074711376 + 1.083958569X + 0.00557352e^{2.929493814X - 0.001028433X^2}$	$(X < 2.200426117)$
	$15.66887372 - 178.4329289e^{-1.322779744X}$	$(X \geq 2.200426117)$

These approximation formulae were developed by Karl DeBisschop, and can be found on the internet at http://hydrotools.sourceforge.net. For the purpose of our slug test analysis, the numerical approximations of the shape factors (A, B and C) were used instead of their graphical counterparts in order to achieve data consistency and to minimize potential introductions of errors. Refer to Section 4.4.2 for detailed description of the slut test method.

Slug Test P3-1

Initial offset in logger reading (feet):	0.006	Date:	03/07/2007
Offset increment in logger reading (feet/sec):	0.000006		
Initial depth to water table (feet):	14.41		
Depth of probe below water table (feet):	7.021		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:50:45	53445.0	0.0	1.9	1.892	5.129	0.71005
3/7/2007 14:50:45	53445.5	0.5	2.03	2.022	4.999	0.69890
3/7/2007 14:50:46	53446.5	1.5	2.29	2.283	4.738	0.67561
3/7/2007 14:50:47	53447.0	2.0	2.44	2.430	4.591	0.66193
3/7/2007 14:50:47	53447.5	2.5	2.57	2.559	4.462	0.64955
3/7/2007 14:50:48	53448.0	3.0	2.71	2.703	4.318	0.63530
3/7/2007 14:50:48	53448.5	3.5	2.85	2.842	4.179	0.62109
3/7/2007 14:50:49	53449.0	4.0	3	2.995	4.026	0.60490
3/7/2007 14:50:49	53449.5	4.5	3.16	3.148	3.873	0.58807
3/7/2007 14:50:50	53450.0	5.0	3.27	3.257	3.764	0.57567
3/7/2007 14:50:50	53450.5	5.5	3.35	3.344	3.677	0.56552
3/7/2007 14:50:51	53451.5	6.5	3.5	3.494	3.527	0.54743
3/7/2007 14:50:52	53452.5	7.5	3.65	3.645	3.376	0.52843
3/7/2007 14:50:53	53453.0	8.0	3.74	3.730	3.291	0.51736
3/7/2007 14:50:53	53453.5	8.5	3.82	3.815	3.206	0.50599
3/7/2007 14:50:54	53454.0	9.0	3.9	3.895	3.126	0.49502
3/7/2007 14:50:54	53454.5	9.5	3.99	3.980	3.041	0.48305
3/7/2007 14:50:55	53455.0	10.0	4.08	4.067	2.954	0.47044
3/7/2007 14:50:55	53455.5	10.5	4.16	4.149	2.872	0.45822
3/7/2007 14:50:56	53456.5	11.5	4.26	4.250	2.771	0.44267
3/7/2007 14:50:57	53457.5	12.5	4.32	4.314	2.707	0.43253
3/7/2007 14:50:59	53459.0	14.0	4.4	4.389	2.632	0.42033
3/7/2007 14:51:00	53460.5	15.5	4.47	4.460	2.561	0.40845
3/7/2007 14:51:02	53462.0	17.0	4.54	4.533	2.488	0.39590
3/7/2007 14:51:03	53463.5	18.5	4.62	4.615	2.406	0.38135
3/7/2007 14:51:04	53464.5	19.5	4.69	4.681	2.340	0.36927
3/7/2007 14:51:05	53465.5	20.5	4.76	4.754	2.267	0.35551
3/7/2007 14:51:06	53466.5	21.5	4.83	4.822	2.199	0.34228
3/7/2007 14:51:08	53468.0	23.0	4.9	4.893	2.128	0.32803
3/7/2007 14:51:10	53470.0	25.0	4.95	4.942	2.079	0.31792
3/7/2007 14:51:12	53472.5	27.5	5	4.994	2.027	0.30693
3/7/2007 14:51:14	53474.5	29.5	5.05	5.043	1.978	0.29630
3/7/2007 14:51:16	53476.5	31.5	5.1	5.093	1.928	0.28519
3/7/2007 14:51:18	53478.5	33.5	5.15	5.142	1.879	0.27401
3/7/2007 14:51:20	53480.5	35.5	5.2	5.187	1.834	0.26349
3/7/2007 14:51:22	53482.5	37.5	5.24	5.229	1.792	0.25343
3/7/2007 14:51:25	53485.0	40.0	5.29	5.278	1.743	0.24140
3/7/2007 14:51:27	53487.0	42.0	5.33	5.326	1.695	0.22928
3/7/2007 14:51:28	53488.5	43.5	5.37	5.365	1.656	0.21917
3/7/2007 14:51:30	53490.5	45.5	5.42	5.410	1.611	0.20721
3/7/2007 14:51:33	53493.0	48.0	5.47	5.457	1.564	0.19436
3/7/2007 14:51:35	53495.5	50.5	5.51	5.502	1.519	0.18169
3/7/2007 14:51:37	53497.5	52.5	5.55	5.539	1.482	0.17099
3/7/2007 14:51:39	53499.5	54.5	5.59	5.577	1.444	0.15971

Slug Test P3-1

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:51:41	53501.5	56.5	5.63	5.617	1.404	0.14752
3/7/2007 14:51:43	53503.5	58.5	5.67	5.657	1.365	0.13498
3/7/2007 14:51:46	53506.0	61.0	5.71	5.699	1.323	0.12140
3/7/2007 14:51:48	53508.0	63.0	5.74	5.730	1.292	0.11111
3/7/2007 14:51:50	53510.5	65.5	5.77	5.765	1.257	0.09918
3/7/2007 14:51:53	53513.0	68.0	5.81	5.800	1.222	0.08692
3/7/2007 14:51:55	53515.0	70.0	5.84	5.833	1.189	0.07503
3/7/2007 14:51:57	53517.0	72.0	5.87	5.864	1.158	0.06355
3/7/2007 14:51:59	53519.0	74.0	5.9	5.894	1.128	0.05216
3/7/2007 14:52:02	53522.0	77.0	5.93	5.925	1.097	0.04006
3/7/2007 14:52:05	53525.0	80.0	5.97	5.958	1.064	0.02679
3/7/2007 14:52:08	53528.5	83.5	6	5.988	1.034	0.01438
3/7/2007 14:52:11	53531.0	86.0	6.02	6.012	1.010	0.00418
3/7/2007 14:52:13	53533.0	88.0	6.04	6.035	0.987	-0.00582
3/7/2007 14:52:15	53535.5	90.5	6.07	6.059	0.963	-0.01651
3/7/2007 14:52:18	53538.0	93.0	6.09	6.085	0.937	-0.02840
3/7/2007 14:52:20	53540.5	95.5	6.12	6.113	0.909	-0.04157
3/7/2007 14:52:22	53542.5	97.5	6.15	6.139	0.883	-0.05417
3/7/2007 14:52:24	53544.5	99.5	6.17	6.162	0.860	-0.06563
3/7/2007 14:52:26	53546.5	101.5	6.19	6.183	0.839	-0.07636
3/7/2007 14:52:28	53548.5	103.5	6.21	6.205	0.817	-0.08790
3/7/2007 14:52:30	53550.5	105.5	6.23	6.224	0.798	-0.09812
3/7/2007 14:52:33	53553.5	108.5	6.25	6.244	0.777	-0.10969
3/7/2007 14:52:35	53555.5	110.5	6.27	6.262	0.759	-0.11987
3/7/2007 14:52:38	53558.5	113.5	6.29	6.281	0.740	-0.13087
3/7/2007 14:52:41	53561.0	116.0	6.31	6.298	0.723	-0.14096
3/7/2007 14:52:44	53564.0	119.0	6.33	6.319	0.702	-0.15375
3/7/2007 14:52:47	53567.0	122.0	6.35	6.338	0.683	-0.16566
3/7/2007 14:52:50	53570.0	125.0	6.36	6.354	0.667	-0.17594
3/7/2007 14:52:53	53573.0	128.0	6.38	6.370	0.651	-0.18648
3/7/2007 14:52:56	53576.0	131.0	6.4	6.387	0.634	-0.19796
3/7/2007 14:53:00	53580.0	135.0	6.41	6.403	0.618	-0.20905
3/7/2007 14:53:03	53583.5	138.5	6.43	6.425	0.596	-0.22478
3/7/2007 14:53:06	53586.5	141.5	6.45	6.439	0.582	-0.23509
3/7/2007 14:53:09	53589.5	144.5	6.46	6.453	0.568	-0.24565
3/7/2007 14:53:12	53592.5	147.5	6.48	6.467	0.554	-0.25647
3/7/2007 14:53:15	53595.5	150.5	6.49	6.481	0.540	-0.26758
3/7/2007 14:53:18	53598.5	153.5	6.5	6.495	0.526	-0.27897
3/7/2007 14:53:22	53602.5	157.5	6.52	6.509	0.512	-0.29066
3/7/2007 14:53:24	53604.0	159.0	6.53	6.521	0.500	-0.30095
3/7/2007 14:53:28	53608.0	163.0	6.54	6.533	0.488	-0.31148
3/7/2007 14:53:32	53612.5	167.5	6.56	6.547	0.474	-0.32410
3/7/2007 14:53:35	53615.5	170.5	6.57	6.561	0.460	-0.33710
3/7/2007 14:53:38	53618.0	173.0	6.58	6.573	0.448	-0.34856
3/7/2007 14:53:42	53622.0	177.0	6.59	6.584	0.437	-0.35933
3/7/2007 14:53:44	53624.5	179.5	6.6	6.594	0.427	-0.36936
3/7/2007 14:53:48	53628.5	183.5	6.62	6.606	0.415	-0.38171
3/7/2007 14:53:52	53632.5	187.5	6.63	6.617	0.404	-0.39335
3/7/2007 14:53:56	53636.5	191.5	6.64	6.631	0.390	-0.40863

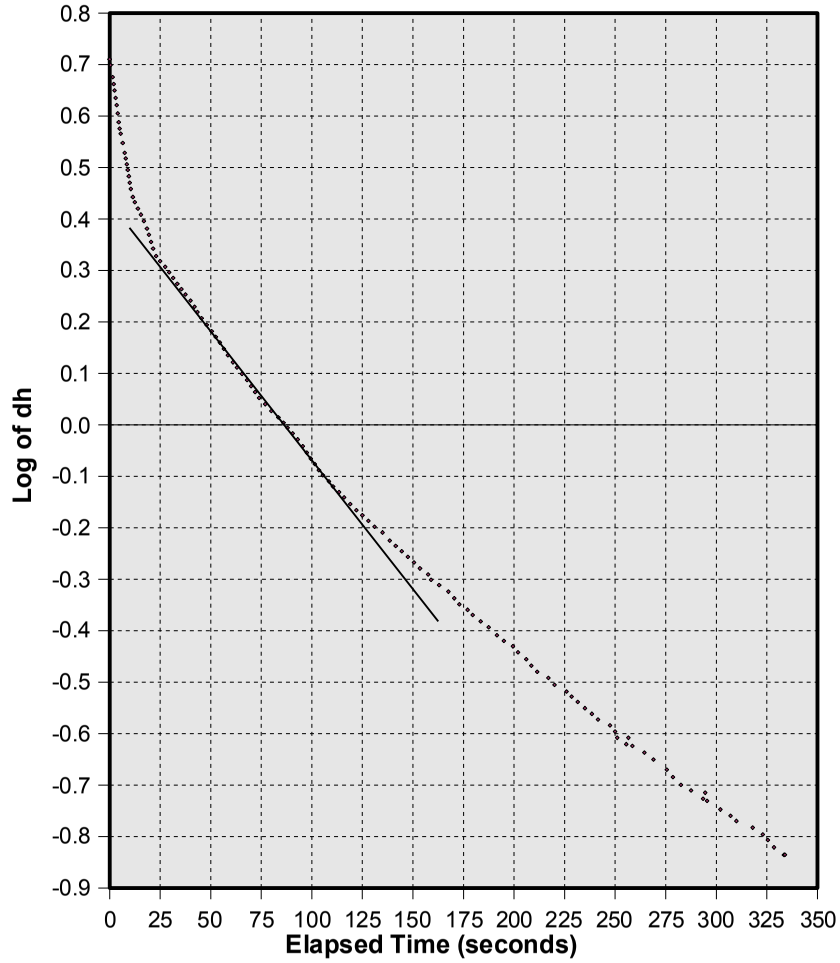
Slug Test P3-1

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:54:00	53640.0	195.0	6.65	6.641	0.380	-0.41988
3/7/2007 14:54:04	53644.5	199.5	6.66	6.650	0.371	-0.43025
3/7/2007 14:54:07	53647.0	202.0	6.67	6.660	0.361	-0.44209
3/7/2007 14:54:11	53651.0	206.0	6.68	6.671	0.350	-0.45549
3/7/2007 14:54:13	53653.5	208.5	6.69	6.681	0.340	-0.46805
3/7/2007 14:54:16	53656.5	211.5	6.7	6.690	0.331	-0.47966
3/7/2007 14:54:22	53662.0	217.0	6.71	6.699	0.322	-0.49158
3/7/2007 14:54:25	53665.0	220.0	6.72	6.709	0.312	-0.50524
3/7/2007 14:54:31	53671.0	226.0	6.73	6.718	0.303	-0.51788
3/7/2007 14:54:33	53673.5	228.5	6.73	6.725	0.296	-0.52800
3/7/2007 14:54:36	53676.5	231.5	6.74	6.732	0.290	-0.53835
3/7/2007 14:54:40	53680.0	235.0	6.75	6.740	0.282	-0.55049
3/7/2007 14:54:43	53683.5	238.5	6.76	6.747	0.275	-0.56139
3/7/2007 14:54:46	53686.5	241.5	6.76	6.754	0.268	-0.57258
3/7/2007 14:54:52	53692.5	247.5	6.77	6.761	0.261	-0.58403
3/7/2007 14:54:55	53695.0	250.0	6.78	6.768	0.254	-0.59584
3/7/2007 14:54:56	53696.0	251.0	6.78	6.775	0.247	-0.60798
3/7/2007 14:55:00	53700.5	255.5	6.79	6.782	0.240	-0.62044
3/7/2007 14:55:01	53701.5	256.5	6.78	6.775	0.247	-0.60793
3/7/2007 14:55:03	53703.5	258.5	6.79	6.784	0.238	-0.62405
3/7/2007 14:55:09	53709.5	264.5	6.8	6.791	0.231	-0.63697
3/7/2007 14:55:14	53714.0	269.0	6.81	6.798	0.224	-0.65030
3/7/2007 14:55:20	53720.5	275.5	6.82	6.808	0.214	-0.67008
3/7/2007 14:55:23	53723.5	278.5	6.82	6.815	0.207	-0.68451
3/7/2007 14:55:27	53727.5	282.5	6.83	6.821	0.200	-0.69942
3/7/2007 14:55:32	53732.5	287.5	6.84	6.826	0.195	-0.71036
3/7/2007 14:55:38	53738.5	293.5	6.84	6.833	0.188	-0.72617
3/7/2007 14:55:39	53739.5	294.5	6.84	6.828	0.193	-0.71475
3/7/2007 14:55:40	53740.5	295.5	6.85	6.835	0.186	-0.73079
3/7/2007 14:55:47	53747.0	302.0	6.85	6.842	0.179	-0.74737
3/7/2007 14:55:52	53752.0	307.0	6.86	6.847	0.174	-0.75961
3/7/2007 14:55:55	53755.0	310.0	6.86	6.851	0.170	-0.76967
3/7/2007 14:56:03	53763.0	318.0	6.87	6.856	0.165	-0.78252
3/7/2007 14:56:08	53768.0	323.0	6.87	6.861	0.160	-0.79581
3/7/2007 14:56:10	53770.5	325.5	6.88	6.865	0.156	-0.80676
3/7/2007 14:56:13	53773.5	328.5	6.88	6.870	0.151	-0.82085
3/7/2007 14:56:18	53778.5	333.5	6.89	6.875	0.146	-0.83539
3/7/2007 14:56:19	53779.0	334.0	6.89	6.875	0.146	-0.83538

Slug Test P3-1

Slug Test by Bouwer and Rice

Displacement Method:	Pump	
Well depth:	28.28	ft
Stick up height:	3.38	ft
Depth to sand pack (BGS):	9.25	ft
Depth to screened interval (BGS):	10.28	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	14.41	ft
Initial Head Change:	5.13	ft
Total well length:	31.66	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.2061	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	18.00	ft
Length of open section (L_e):	17.25	ft
L_e / r_w:	48.7059	
A (dimensionless):	3.144	
B (dimensionless):	0.525	
Drawdown at time = 0 (y_0):	2.20	ft
Drawdown at time = t (y_t):	0.67	ft
Elapsed Time between y_0 and y_t (t):	103.5	sec
Initial water column in well (L_w):	17.25	ft
$\ln(R_e/r_w)$ =	2.54	
K =	3.60E-05	ft/sec
	1.10E-03	**cm/sec**
	1136.82	ft/yr



Water above sand pack:	No
%Duration below sand pack:	100.00%
Water above screen:	No
%Duration below screen:	100.00%

Slug Test P3-2S

Initial offset in logger reading (feet):	-0.066	Date:	02/20/2007
Offset increment in logger reading (feet/sec):	0.000067		
Initial depth to water table (feet):	17.83		
Depth of probe below water table (feet):	7.703		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 15:04:51	54291.5	0.0	0.41	0.457	7.245	0.86007
2/20/2007 15:04:52	54292.5	1.0	0.69	0.737	6.966	0.84296
2/20/2007 15:04:53	54293.0	1.5	0.91	0.956	6.747	0.82908
2/20/2007 15:04:53	54293.5	2.0	1.11	1.157	6.546	0.81595
2/20/2007 15:04:54	54294.0	2.5	1.27	1.319	6.384	0.80507
2/20/2007 15:04:55	54295.0	3.5	1.56	1.605	6.098	0.78517
2/20/2007 15:04:55	54295.5	4.0	1.73	1.770	5.933	0.77326
2/20/2007 15:04:56	54296.0	4.5	1.89	1.937	5.766	0.76086
2/20/2007 15:04:56	54296.5	5.0	2.06	2.102	5.601	0.74825
2/20/2007 15:04:57	54297.0	5.5	2.21	2.253	5.450	0.73639
2/20/2007 15:04:57	54297.5	6.0	2.35	2.394	5.309	0.72500
2/20/2007 15:04:58	54298.0	6.5	2.48	2.524	5.179	0.71424
2/20/2007 15:04:58	54298.5	7.0	2.6	2.649	5.054	0.70363
2/20/2007 15:04:59	54299.5	8.0	2.83	2.870	4.833	0.68422
2/20/2007 15:05:00	54300.5	9.0	3.02	3.068	4.635	0.66606
2/20/2007 15:05:01	54301.5	10.0	3.21	3.250	4.453	0.64867
2/20/2007 15:05:02	54302.5	11.0	3.37	3.417	4.286	0.63208
2/20/2007 15:05:03	54303.5	12.0	3.52	3.567	4.135	0.61651
2/20/2007 15:05:04	54304.5	13.0	3.67	3.713	3.989	0.60090
2/20/2007 15:05:05	54305.5	14.0	3.8	3.847	3.855	0.58607
2/20/2007 15:05:06	54306.5	15.0	3.93	3.974	3.728	0.57153
2/20/2007 15:05:07	54307.5	16.0	4.04	4.080	3.623	0.55902
2/20/2007 15:05:08	54308.5	17.0	4.13	4.172	3.531	0.54785
2/20/2007 15:05:10	54310.0	18.5	4.24	4.283	3.420	0.53399
2/20/2007 15:05:11	54311.5	20.0	4.35	4.389	3.314	0.52033
2/20/2007 15:05:14	54314.0	22.5	4.43	4.469	3.234	0.50974
2/20/2007 15:05:20	54320.0	28.5	4.51	4.550	3.152	0.49864
2/20/2007 15:05:24	54324.5	33.0	4.58	4.627	3.076	0.48794
2/20/2007 15:05:27	54327.5	36.0	4.66	4.705	2.998	0.47682
2/20/2007 15:05:30	54330.0	38.5	4.75	4.792	2.911	0.46405
2/20/2007 15:05:32	54332.0	40.5	4.82	4.865	2.838	0.45304
2/20/2007 15:05:34	54334.0	42.5	4.91	4.951	2.751	0.43954
2/20/2007 15:05:36	54336.0	44.5	4.99	5.033	2.669	0.42642
2/20/2007 15:05:37	54337.5	46.0	5.05	5.095	2.608	0.41624
2/20/2007 15:05:39	54339.0	47.5	5.12	5.161	2.542	0.40512
2/20/2007 15:05:40	54340.5	49.0	5.18	5.226	2.477	0.39389
2/20/2007 15:05:42	54342.0	50.5	5.25	5.292	2.411	0.38217
2/20/2007 15:05:43	54343.5	52.0	5.31	5.356	2.347	0.37051
2/20/2007 15:05:45	54345.0	53.5	5.38	5.417	2.286	0.35909
2/20/2007 15:05:46	54346.5	55.0	5.44	5.481	2.222	0.34678
2/20/2007 15:05:48	54348.0	56.5	5.51	5.549	2.154	0.33330
2/20/2007 15:05:49	54349.5	58.0	5.57	5.614	2.088	0.31981
2/20/2007 15:05:51	54351.0	59.5	5.63	5.675	2.027	0.30695
2/20/2007 15:05:52	54352.5	61.0	5.7	5.736	1.967	0.29371

Slug Test P3-2S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 15:05:54	54354.0	62.5	5.75	5.795	1.908	0.28050
2/20/2007 15:05:55	54355.5	64.0	5.81	5.854	1.849	0.26688
2/20/2007 15:05:57	54357.0	65.5	5.87	5.910	1.793	0.25355
2/20/2007 15:05:58	54358.5	67.0	5.92	5.960	1.743	0.24129
2/20/2007 15:06:00	54360.0	68.5	5.98	6.016	1.687	0.22713
2/20/2007 15:06:01	54361.5	70.0	6.02	6.063	1.640	0.21489
2/20/2007 15:06:03	54363.0	71.5	6.07	6.113	1.590	0.20147
2/20/2007 15:06:04	54364.5	73.0	6.12	6.161	1.541	0.18791
2/20/2007 15:06:06	54366.0	74.5	6.16	6.203	1.499	0.17594
2/20/2007 15:06:07	54367.5	76.0	6.2	6.243	1.460	0.16423
2/20/2007 15:06:08	54368.5	77.0	6.24	6.279	1.424	0.15340
2/20/2007 15:06:10	54370.0	78.5	6.27	6.314	1.389	0.14262
2/20/2007 15:06:11	54371.5	80.0	6.32	6.356	1.347	0.12932
2/20/2007 15:06:13	54373.0	81.5	6.35	6.394	1.309	0.11692
2/20/2007 15:06:14	54374.5	83.0	6.39	6.429	1.274	0.10518
2/20/2007 15:06:16	54376.0	84.5	6.43	6.467	1.236	0.09207
2/20/2007 15:06:17	54377.5	86.0	6.46	6.502	1.201	0.07963
2/20/2007 15:06:19	54379.0	87.5	6.5	6.538	1.164	0.06608
2/20/2007 15:06:20	54380.5	89.0	6.53	6.567	1.135	0.05516
2/20/2007 15:06:22	54382.0	90.5	6.56	6.597	1.106	0.04357
2/20/2007 15:06:23	54383.5	92.0	6.59	6.633	1.070	0.02924
2/20/2007 15:06:25	54385.0	93.5	6.62	6.661	1.042	0.01776
2/20/2007 15:06:26	54386.5	95.0	6.65	6.691	1.012	0.00511
2/20/2007 15:06:28	54388.0	96.5	6.68	6.717	0.986	-0.00615
2/20/2007 15:06:29	54389.5	98.0	6.71	6.745	0.958	-0.01862
2/20/2007 15:06:31	54391.0	99.5	6.73	6.769	0.934	-0.02959
2/20/2007 15:06:32	54392.5	101.0	6.76	6.797	0.906	-0.04276
2/20/2007 15:06:34	54394.0	102.5	6.78	6.819	0.883	-0.05387
2/20/2007 15:06:35	54395.5	104.0	6.81	6.843	0.859	-0.06578
2/20/2007 15:06:37	54397.0	105.5	6.83	6.869	0.834	-0.07907
2/20/2007 15:06:38	54398.5	107.0	6.85	6.890	0.813	-0.09010
2/20/2007 15:06:40	54400.0	108.5	6.87	6.909	0.794	-0.10032
2/20/2007 15:06:42	54402.0	110.5	6.9	6.937	0.766	-0.11584
2/20/2007 15:06:43	54403.5	112.0	6.92	6.958	0.745	-0.12786
2/20/2007 15:06:45	54405.0	113.5	6.94	6.981	0.722	-0.14142
2/20/2007 15:06:46	54406.5	115.0	6.96	6.998	0.705	-0.15170
2/20/2007 15:06:48	54408.0	116.5	6.98	7.019	0.684	-0.16477
2/20/2007 15:06:50	54410.0	118.5	7	7.039	0.663	-0.17822
2/20/2007 15:06:51	54411.5	120.0	7.02	7.058	0.645	-0.19077
2/20/2007 15:06:53	54413.5	122.0	7.04	7.079	0.624	-0.20506
2/20/2007 15:06:55	54415.5	124.0	7.06	7.100	0.603	-0.21984
2/20/2007 15:06:57	54417.0	125.5	7.08	7.117	0.586	-0.23219
2/20/2007 15:06:59	54419.0	127.5	7.1	7.138	0.565	-0.24794
2/20/2007 15:07:01	54421.0	129.5	7.12	7.154	0.549	-0.26031
2/20/2007 15:07:02	54422.5	131.0	7.13	7.168	0.535	-0.27145
2/20/2007 15:07:04	54424.5	133.0	7.15	7.183	0.519	-0.28452
2/20/2007 15:07:06	54426.0	134.5	7.16	7.195	0.507	-0.29458
2/20/2007 15:07:07	54427.5	136.0	7.17	7.209	0.494	-0.30664
2/20/2007 15:07:09	54429.0	137.5	7.19	7.221	0.482	-0.31724

Slug Test P3-2S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 15:07:10	54430.5	139.0	7.2	7.233	0.470	-0.32811
2/20/2007 15:07:12	54432.0	140.5	7.21	7.247	0.456	-0.34115
2/20/2007 15:07:14	54434.0	142.5	7.22	7.259	0.444	-0.35260
2/20/2007 15:07:15	54435.5	144.0	7.23	7.270	0.433	-0.36340
2/20/2007 15:07:17	54437.5	146.0	7.24	7.280	0.423	-0.37341
2/20/2007 15:07:19	54439.5	148.0	7.26	7.293	0.409	-0.38787
2/20/2007 15:07:22	54442.0	150.5	7.27	7.304	0.399	-0.39952
2/20/2007 15:07:24	54444.5	153.0	7.28	7.314	0.389	-0.41037
2/20/2007 15:07:26	54446.5	155.0	7.29	7.323	0.380	-0.42039
2/20/2007 15:07:27	54447.5	156.0	7.3	7.333	0.370	-0.43190
2/20/2007 15:07:29	54449.0	157.5	7.31	7.342	0.361	-0.44247
2/20/2007 15:07:30	54450.5	159.0	7.32	7.351	0.352	-0.45331
2/20/2007 15:07:32	54452.5	161.0	7.33	7.361	0.342	-0.46566
2/20/2007 15:07:34	54454.5	163.0	7.34	7.369	0.333	-0.47706
2/20/2007 15:07:36	54456.0	164.5	7.34	7.378	0.324	-0.48881
2/20/2007 15:07:37	54457.0	165.5	7.35	7.386	0.317	-0.49956
2/20/2007 15:07:39	54459.5	168.0	7.36	7.395	0.308	-0.51185
2/20/2007 15:07:41	54461.5	170.0	7.37	7.404	0.299	-0.52455
2/20/2007 15:07:45	54465.0	173.5	7.38	7.414	0.289	-0.53897
2/20/2007 15:07:47	54467.0	175.5	7.39	7.421	0.282	-0.54941
2/20/2007 15:07:50	54470.5	179.0	7.39	7.427	0.275	-0.55995
2/20/2007 15:07:52	54472.0	180.5	7.4	7.436	0.267	-0.57422
2/20/2007 15:07:55	54475.0	183.5	7.41	7.443	0.260	-0.58544
2/20/2007 15:07:58	54478.0	186.5	7.42	7.452	0.251	-0.60041
2/20/2007 15:08:04	54484.0	192.5	7.43	7.461	0.241	-0.61735
2/20/2007 15:08:05	54485.5	194.0	7.44	7.468	0.234	-0.62994
2/20/2007 15:08:08	54488.5	197.0	7.44	7.475	0.228	-0.64272
2/20/2007 15:08:12	54492.5	201.0	7.45	7.482	0.221	-0.65576
2/20/2007 15:08:17	54497.5	206.0	7.46	7.489	0.214	-0.66907
2/20/2007 15:08:19	54499.0	207.5	7.46	7.493	0.209	-0.67911
2/20/2007 15:08:25	54505.0	213.5	7.47	7.500	0.203	-0.69302
2/20/2007 15:08:25	54505.5	214.0	7.46	7.495	0.208	-0.68237
2/20/2007 15:08:26	54506.0	214.5	7.47	7.500	0.203	-0.69288
2/20/2007 15:08:29	54509.5	218.0	7.48	7.507	0.196	-0.70762
2/20/2007 15:08:35	54515.0	223.5	7.48	7.513	0.189	-0.72256
2/20/2007 15:08:46	54526.5	235.0	7.49	7.520	0.183	-0.73709
2/20/2007 15:08:49	54529.0	237.5	7.5	7.526	0.176	-0.75360
2/20/2007 15:08:57	54537.5	246.0	7.5	7.533	0.170	-0.76973
2/20/2007 15:09:08	54548.0	256.5	7.51	7.539	0.164	-0.78614
2/20/2007 15:09:21	54561.5	270.0	7.51	7.535	0.168	-0.77590
2/20/2007 15:09:24	54564.5	273.0	7.51	7.540	0.163	-0.78853
2/20/2007 15:09:32	54572.5	281.0	7.52	7.545	0.158	-0.80061
2/20/2007 15:09:41	54581.0	289.5	7.52	7.549	0.154	-0.81295
2/20/2007 15:09:44	54584.0	292.5	7.53	7.553	0.150	-0.82381
2/20/2007 15:09:51	54591.0	299.5	7.52	7.547	0.156	-0.80826
2/20/2007 15:09:56	54596.0	304.5	7.53	7.552	0.151	-0.82149
2/20/2007 15:10:00	54600.5	309.0	7.52	7.547	0.156	-0.80650
2/20/2007 15:10:01	54601.5	310.0	7.53	7.552	0.151	-0.82044
2/20/2007 15:10:07	54607.5	316.0	7.53	7.556	0.147	-0.83385

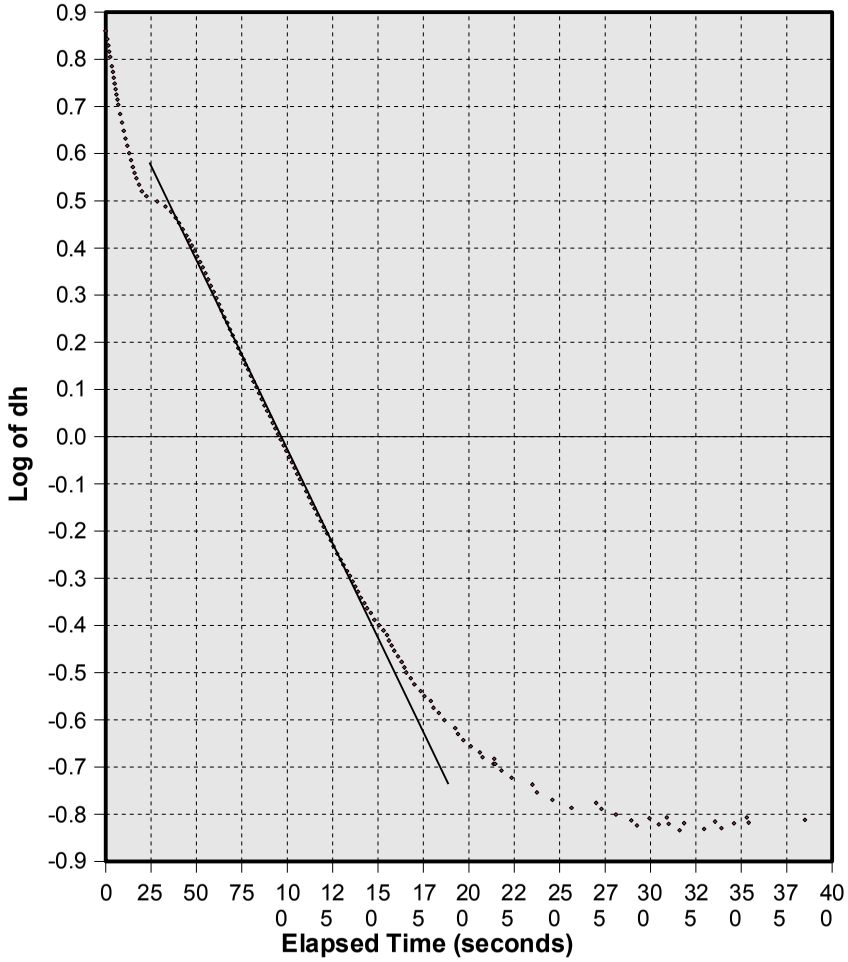
Slug Test P3-2S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 15:10:10	54610.0	318.5	7.53	7.551	0.152	-0.81881
2/20/2007 15:10:21	54621.0	329.5	7.53	7.555	0.148	-0.83119
2/20/2007 15:10:27	54627.0	335.5	7.53	7.550	0.153	-0.81557
2/20/2007 15:10:30	54630.5	339.0	7.53	7.555	0.148	-0.82933
2/20/2007 15:10:37	54637.5	346.0	7.53	7.551	0.152	-0.81928
2/20/2007 15:10:44	54644.5	353.0	7.53	7.547	0.156	-0.80666
2/20/2007 15:10:45	54645.5	354.0	7.53	7.551	0.152	-0.81775
2/20/2007 15:11:16	54676.5	385.0	7.53	7.549	0.154	-0.81188

Slug Test P3-2S

Slug Test by Bouwer and Rice

Displacement Method:	Pump	
Well depth:	27.00	ft
Stick up height:	3.13	ft
Depth to sand pack (BGS):	11.00	ft
Depth to screened interval (BGS):	12.00	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	17.83	ft
Initial Head Change:	7.25	ft
Total well length:	30.13	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.2061	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	15.00	ft
Length of open section (L_e):	12.30	ft
L_e / r_w:	34.7294	
A (dimensionless):	2.711	
B (dimensionless):	0.452	
Drawdown at time = 0 (y_0):	3.06	ft
Drawdown at time = t (y_t):	0.43	ft
Elapsed Time between y_0 and y_t (t):	111	sec
Initial water column in well (L_w):	12.30	ft
$\ln(R_e/r_w)$ =	2.24	
K =	6.83E-05	ft/sec
	2.08E-03	**cm/sec**
	2153.39	ft/yr



Water above sand pack:	No
%Duration below sand pack:	100.00%
Water above screen:	No
%Duration below screen:	100.00%

Slug Test P3-2D

Initial offset in logger reading (feet):	0.088	Date:	12/12/2006
Offset increment in logger reading (feet/sec):	0.000003		
Initial depth to water table (feet):	18.14		
Depth of probe below water table (feet):	3.703		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:30:56	55856.5	0.0	13.37	13.283	9.580	0.98136
12/12/2006 15:30:57	55857.0	0.5	12.75	12.658	8.955	0.95206
12/12/2006 15:31:00	55860.5	4.0	12.54	12.446	8.743	0.94165
12/12/2006 15:31:04	55864.5	8.0	12.34	12.246	8.543	0.93160
12/12/2006 15:31:08	55868.5	12.0	12.14	12.047	8.344	0.92137
12/12/2006 15:31:13	55873.0	16.5	11.93	11.836	8.133	0.91024
12/12/2006 15:31:17	55877.5	21.0	11.72	11.634	7.931	0.89932
12/12/2006 15:31:22	55882.0	25.5	11.53	11.441	7.738	0.88862
12/12/2006 15:31:26	55886.5	30.0	11.35	11.257	7.554	0.87817
12/12/2006 15:31:31	55891.0	34.5	11.17	11.080	7.377	0.86787
12/12/2006 15:31:35	55895.5	39.0	11	10.911	7.208	0.85780
12/12/2006 15:31:40	55900.5	44.0	10.82	10.732	7.029	0.84688
12/12/2006 15:31:45	55905.5	49.0	10.65	10.559	6.856	0.83605
12/12/2006 15:31:50	55910.5	54.0	10.48	10.393	6.690	0.82541
12/12/2006 15:31:55	55915.5	59.0	10.32	10.231	6.528	0.81476
12/12/2006 15:32:00	55920.5	64.0	10.17	10.079	6.376	0.80453
12/12/2006 15:32:05	55925.5	69.0	10.02	9.928	6.225	0.79412
12/12/2006 15:32:10	55930.5	74.0	9.88	9.786	6.083	0.78409
12/12/2006 15:32:15	55935.5	79.0	9.74	9.647	5.944	0.77405
12/12/2006 15:32:21	55941.0	84.5	9.59	9.501	5.798	0.76325
12/12/2006 15:32:26	55946.5	90.0	9.45	9.357	5.654	0.75233
12/12/2006 15:32:32	55952.0	95.5	9.31	9.220	5.517	0.74167
12/12/2006 15:32:37	55957.5	101.0	9.18	9.089	5.386	0.73123
12/12/2006 15:32:43	55963.0	106.5	9.05	8.961	5.258	0.72079
12/12/2006 15:32:48	55968.5	112.0	8.93	8.837	5.134	0.71042
12/12/2006 15:32:54	55974.0	117.5	8.81	8.717	5.014	0.70014
12/12/2006 15:32:59	55979.5	123.0	8.69	8.600	4.897	0.68989
12/12/2006 15:33:05	55985.0	128.5	8.58	8.487	4.784	0.67975
12/12/2006 15:33:10	55990.5	134.0	8.47	8.378	4.674	0.66973
12/12/2006 15:33:16	55996.5	140.0	8.35	8.263	4.559	0.65891
12/12/2006 15:33:22	56002.5	146.0	8.24	8.150	4.446	0.64801
12/12/2006 15:33:28	56008.5	152.0	8.13	8.044	4.340	0.63753
12/12/2006 15:33:34	56014.5	158.0	8.03	7.939	4.235	0.62690
12/12/2006 15:33:40	56020.5	164.0	7.93	7.840	4.136	0.61662
12/12/2006 15:33:46	56026.5	170.0	7.83	7.742	4.038	0.60621
12/12/2006 15:33:52	56032.5	176.0	7.74	7.647	3.943	0.59587
12/12/2006 15:33:58	56038.5	182.0	7.64	7.554	3.850	0.58550
12/12/2006 15:34:04	56044.5	188.0	7.55	7.465	3.761	0.57534
12/12/2006 15:34:10	56050.5	194.0	7.47	7.378	3.674	0.56518
12/12/2006 15:34:16	56056.5	200.0	7.38	7.294	3.590	0.55513
12/12/2006 15:34:22	56062.5	206.0	7.3	7.212	3.508	0.54509
12/12/2006 15:34:29	56069.0	212.5	7.22	7.128	3.424	0.53457
12/12/2006 15:34:35	56075.0	218.5	7.14	7.050	3.346	0.52456
12/12/2006 15:34:41	56081.5	225.0	7.06	6.970	3.266	0.51405

Slug Test P3-2D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:34:48	56088.0	231.5	6.98	6.892	3.188	0.50355
12/12/2006 15:34:54	56094.5	238.0	6.9	6.815	3.111	0.49293
12/12/2006 15:35:01	56101.0	244.5	6.83	6.744	3.040	0.48290
12/12/2006 15:35:07	56107.5	251.0	6.76	6.670	2.966	0.47219
12/12/2006 15:35:14	56114.0	257.5	6.69	6.601	2.897	0.46197
12/12/2006 15:35:20	56120.5	264.0	6.62	6.535	2.831	0.45196
12/12/2006 15:35:27	56127.0	270.5	6.56	6.468	2.764	0.44155
12/12/2006 15:35:34	56134.0	277.5	6.49	6.401	2.698	0.43105
12/12/2006 15:35:40	56140.5	284.0	6.43	6.338	2.635	0.42079
12/12/2006 15:35:47	56147.5	291.0	6.37	6.276	2.573	0.41045
12/12/2006 15:35:54	56154.5	298.0	6.3	6.214	2.511	0.39985
12/12/2006 15:36:01	56161.5	305.0	6.24	6.152	2.449	0.38899
12/12/2006 15:36:08	56168.5	312.0	6.19	6.096	2.393	0.37894
12/12/2006 15:36:15	56175.5	319.0	6.13	6.039	2.336	0.36846
12/12/2006 15:36:22	56182.5	326.0	6.07	5.983	2.280	0.35792
12/12/2006 15:36:29	56189.5	333.0	6.02	5.930	2.227	0.34770
12/12/2006 15:36:36	56196.5	340.0	5.97	5.879	2.176	0.33764
12/12/2006 15:36:44	56204.0	347.5	5.92	5.826	2.123	0.32692
12/12/2006 15:36:51	56211.0	354.5	5.87	5.777	2.074	0.31678
12/12/2006 15:36:58	56218.5	362.0	5.82	5.726	2.023	0.30596
12/12/2006 15:37:06	56226.0	369.5	5.77	5.679	1.976	0.29574
12/12/2006 15:37:13	56233.5	377.0	5.72	5.632	1.929	0.28528
12/12/2006 15:37:20	56240.5	384.0	5.68	5.588	1.885	0.27526
12/12/2006 15:37:28	56248.0	391.5	5.63	5.544	1.841	0.26499
12/12/2006 15:37:35	56255.5	399.0	5.59	5.502	1.799	0.25496
12/12/2006 15:37:43	56263.0	406.5	5.55	5.459	1.756	0.24445
12/12/2006 15:37:50	56270.0	413.5	5.51	5.419	1.716	0.23444
12/12/2006 15:37:58	56278.0	421.5	5.47	5.377	1.674	0.22367
12/12/2006 15:38:06	56286.0	429.5	5.43	5.337	1.634	0.21315
12/12/2006 15:38:14	56294.0	437.5	5.39	5.298	1.595	0.20265
12/12/2006 15:38:22	56302.0	445.5	5.35	5.260	1.557	0.19217
12/12/2006 15:38:30	56310.0	453.5	5.31	5.224	1.521	0.18200
12/12/2006 15:38:37	56317.5	461.0	5.28	5.189	1.486	0.17188
12/12/2006 15:38:45	56325.5	469.0	5.24	5.153	1.450	0.16122
12/12/2006 15:38:53	56333.5	477.0	5.21	5.120	1.416	0.15121
12/12/2006 15:39:01	56341.5	485.0	5.18	5.087	1.383	0.14097
12/12/2006 15:39:10	56350.0	493.5	5.14	5.053	1.349	0.13015
12/12/2006 15:39:18	56358.5	502.0	5.11	5.022	1.318	0.12005
12/12/2006 15:39:26	56366.5	510.0	5.08	4.991	1.287	0.10971
12/12/2006 15:39:34	56374.5	518.0	5.05	4.960	1.256	0.09912
12/12/2006 15:39:43	56383.5	527.0	5.02	4.929	1.225	0.08826
12/12/2006 15:39:52	56392.5	536.0	4.99	4.900	1.196	0.07785
12/12/2006 15:40:01	56401.0	544.5	4.96	4.872	1.168	0.06755
12/12/2006 15:40:09	56409.5	553.0	4.94	4.845	1.141	0.05739
12/12/2006 15:40:18	56418.0	561.5	4.91	4.819	1.115	0.04737
12/12/2006 15:40:26	56426.5	570.0	4.88	4.792	1.088	0.03672
12/12/2006 15:40:36	56436.0	579.5	4.86	4.765	1.061	0.02579
12/12/2006 15:40:45	56445.0	588.5	4.83	4.739	1.035	0.01501
12/12/2006 15:40:54	56454.0	597.5	4.8	4.714	1.010	0.00438

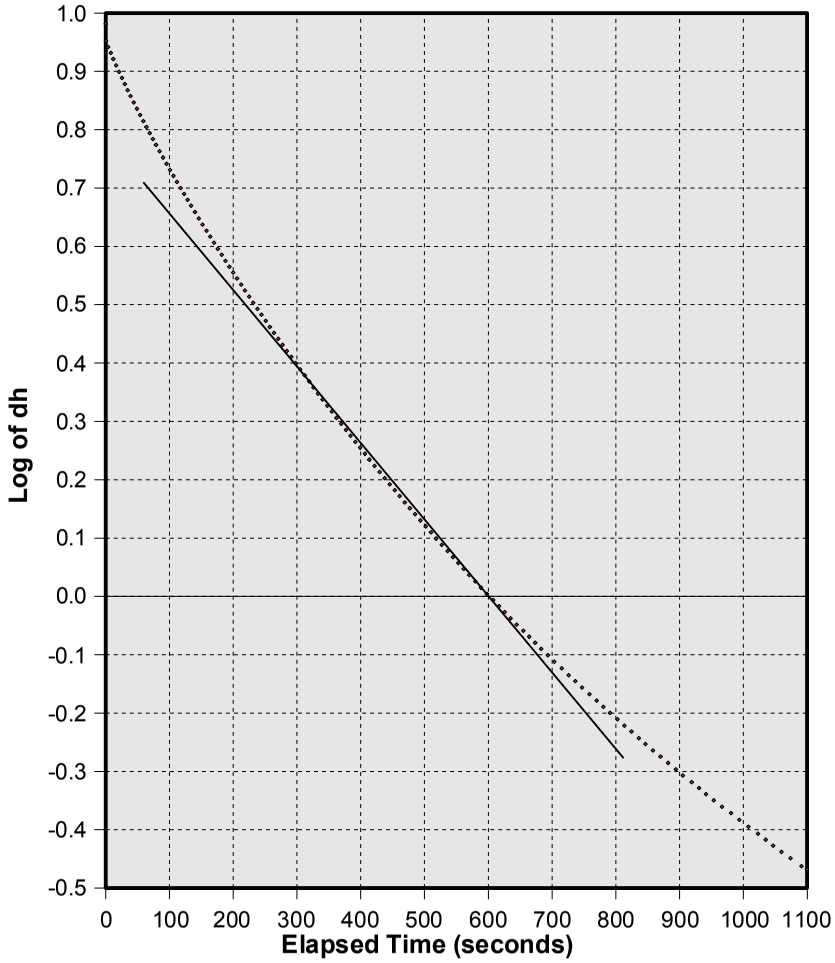
Slug Test P3-2D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:41:04	56464.0	607.5	4.78	4.690	0.986	-0.00608
12/12/2006 15:41:13	56473.5	617.0	4.76	4.665	0.962	-0.01679
12/12/2006 15:41:22	56482.0	625.5	4.73	4.643	0.940	-0.02685
12/12/2006 15:41:31	56491.5	635.0	4.71	4.620	0.917	-0.03762
12/12/2006 15:41:41	56501.0	644.5	4.69	4.598	0.895	-0.04818
12/12/2006 15:41:51	56511.5	655.0	4.67	4.576	0.873	-0.05900
12/12/2006 15:42:00	56520.5	664.0	4.65	4.556	0.853	-0.06908
12/12/2006 15:42:10	56530.0	673.5	4.63	4.536	0.833	-0.07940
12/12/2006 15:42:19	56539.5	683.0	4.61	4.516	0.813	-0.08997
12/12/2006 15:42:30	56550.0	693.5	4.59	4.496	0.793	-0.10080
12/12/2006 15:42:40	56560.0	703.5	4.57	4.476	0.773	-0.11192
12/12/2006 15:42:51	56571.5	715.0	4.55	4.456	0.753	-0.12332
12/12/2006 15:43:02	56582.5	726.0	4.53	4.436	0.733	-0.13504
12/12/2006 15:43:13	56593.0	736.5	4.51	4.419	0.716	-0.14525
12/12/2006 15:43:23	56603.5	747.0	4.49	4.401	0.698	-0.15633
12/12/2006 15:43:35	56615.0	758.5	4.47	4.383	0.680	-0.16770
12/12/2006 15:43:46	56626.5	770.0	4.46	4.366	0.663	-0.17873
12/12/2006 15:43:57	56637.0	780.5	4.44	4.350	0.647	-0.18936
12/12/2006 15:44:07	56647.5	791.0	4.43	4.335	0.632	-0.19958
12/12/2006 15:44:19	56659.0	802.5	4.41	4.319	0.616	-0.21074
12/12/2006 15:44:30	56670.0	813.5	4.4	4.304	0.601	-0.22148
12/12/2006 15:44:41	56681.0	824.5	4.38	4.290	0.586	-0.23175
12/12/2006 15:44:52	56692.5	836.0	4.37	4.275	0.571	-0.24303
12/12/2006 15:45:03	56703.0	846.5	4.35	4.262	0.558	-0.25305
12/12/2006 15:45:14	56714.5	858.0	4.34	4.248	0.544	-0.26410
12/12/2006 15:45:26	56726.5	870.0	4.33	4.235	0.531	-0.27463
12/12/2006 15:45:38	56738.5	882.0	4.31	4.222	0.518	-0.28541
12/12/2006 15:45:50	56750.5	894.0	4.3	4.209	0.505	-0.29648
12/12/2006 15:46:01	56761.5	905.0	4.29	4.197	0.493	-0.30694
12/12/2006 15:46:15	56775.5	919.0	4.28	4.184	0.480	-0.31858
12/12/2006 15:46:27	56787.0	930.5	4.26	4.173	0.469	-0.32867
12/12/2006 15:46:38	56798.0	941.5	4.25	4.162	0.458	-0.33901
12/12/2006 15:46:50	56810.0	953.5	4.24	4.151	0.447	-0.34960
12/12/2006 15:47:03	56823.0	966.5	4.23	4.139	0.436	-0.36045
12/12/2006 15:47:17	56837.0	980.5	4.22	4.128	0.425	-0.37159
12/12/2006 15:47:30	56850.0	993.5	4.21	4.117	0.414	-0.38302
12/12/2006 15:47:44	56864.5	1008.0	4.2	4.106	0.403	-0.39476
12/12/2006 15:47:59	56879.5	1023.0	4.19	4.095	0.392	-0.40683
12/12/2006 15:48:11	56891.5	1035.0	4.18	4.086	0.383	-0.41696
12/12/2006 15:48:23	56903.0	1046.5	4.17	4.077	0.374	-0.42733
12/12/2006 15:48:36	56916.0	1059.5	4.16	4.068	0.365	-0.43796
12/12/2006 15:48:50	56930.5	1074.0	4.15	4.059	0.356	-0.44886
12/12/2006 15:49:07	56947.5	1091.0	4.14	4.048	0.345	-0.46256
12/12/2006 15:49:16	56956.0	1099.5	4.14	4.044	0.341	-0.46767

Slug Test P3-2D

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	53.80	ft
Stick up height:	2.51	ft
Depth to sand pack (BGS):	47.75	ft
Depth to screened interval (BGS):	48.80	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	18.14	ft
Initial Head Change:	9.58	ft
Total well length:	56.31	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	5.00	ft
Length of open section (L_e):	5.00	ft
L_e / r_w:	14.1176	
C (dimensionless):	1.483	
Drawdown at time = 0 (y_0):	2.60	ft
Drawdown at time = t (y_t):	0.94	ft
Elapsed Time between y_0 and y_t (t):	336.5	sec
Initial water column in well (L_w):	38.17	ft
$\ln(R_e/r_w)$ =	2.94	
K =	6.16E-06	ft/sec
	1.88E-04	**cm/sec**
	194.19	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-3

Initial offset in logger reading (feet):	-0.028	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	0.000002		
Initial depth to water table (feet):	8.81		
Depth of probe below water table (feet):	7.828		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:54:27	53667.5	0.0	1.44	1.471	6.358	0.80330
2/21/2007 14:54:29	53669.5	2.0	1.69	1.721	6.108	0.78587
2/21/2007 14:54:30	53670.5	3.0	1.92	1.949	5.880	0.76935
2/21/2007 14:54:31	53671.5	4.0	2.11	2.140	5.689	0.75501
2/21/2007 14:54:33	53673.0	5.5	2.27	2.302	5.527	0.74246
2/21/2007 14:54:35	53675.0	7.5	2.4	2.429	5.400	0.73236
2/21/2007 14:54:38	53678.5	11.0	2.53	2.553	5.276	0.72228
2/21/2007 14:54:42	53682.5	15.0	2.65	2.674	5.155	0.71220
2/21/2007 14:54:47	53687.5	20.0	2.77	2.800	5.029	0.70145
2/21/2007 14:54:53	53693.0	25.5	2.9	2.923	4.906	0.69070
2/21/2007 14:54:57	53697.5	30.0	3.01	3.036	4.793	0.68058
2/21/2007 14:55:02	53702.5	35.0	3.13	3.155	4.674	0.66966
2/21/2007 14:55:07	53707.5	40.0	3.24	3.268	4.561	0.65903
2/21/2007 14:55:11	53711.5	44.0	3.36	3.387	4.442	0.64755
2/21/2007 14:55:13	53713.5	46.0	3.48	3.510	4.319	0.63535
2/21/2007 14:55:15	53715.0	47.5	3.59	3.615	4.214	0.62466
2/21/2007 14:55:16	53716.5	49.0	3.71	3.738	4.091	0.61180
2/21/2007 14:55:18	53718.0	50.5	3.83	3.860	3.969	0.59865
2/21/2007 14:55:19	53719.5	52.0	3.96	3.987	3.842	0.58452
2/21/2007 14:55:21	53721.0	53.5	4.09	4.117	3.712	0.56957
2/21/2007 14:55:22	53722.0	54.5	4.18	4.204	3.625	0.55927
2/21/2007 14:55:23	53723.0	55.5	4.26	4.288	3.541	0.54909
2/21/2007 14:55:24	53724.0	56.5	4.35	4.373	3.456	0.53854
2/21/2007 14:55:25	53725.0	57.5	4.43	4.453	3.376	0.52837
2/21/2007 14:55:26	53726.0	58.5	4.51	4.536	3.293	0.51755
2/21/2007 14:55:27	53727.0	59.5	4.58	4.611	3.218	0.50755
2/21/2007 14:55:28	53728.0	60.5	4.66	4.691	3.138	0.49661
2/21/2007 14:55:29	53729.0	61.5	4.74	4.764	3.065	0.48639
2/21/2007 14:55:30	53730.5	63.0	4.84	4.865	2.964	0.47184
2/21/2007 14:55:32	53732.0	64.5	4.92	4.952	2.877	0.45890
2/21/2007 14:55:33	53733.5	66.0	4.99	5.020	2.809	0.44851
2/21/2007 14:55:35	53735.5	68.0	5.07	5.098	2.731	0.43628
2/21/2007 14:55:37	53737.5	70.0	5.15	5.178	2.651	0.42337
2/21/2007 14:55:39	53739.5	72.0	5.23	5.253	2.576	0.41090
2/21/2007 14:55:42	53742.0	74.5	5.29	5.319	2.510	0.39963
2/21/2007 14:55:44	53744.5	77.0	5.35	5.380	2.449	0.38894
2/21/2007 14:55:47	53747.5	80.0	5.41	5.441	2.388	0.37799
2/21/2007 14:55:50	53750.5	83.0	5.47	5.497	2.332	0.36768
2/21/2007 14:55:53	53753.5	86.0	5.52	5.551	2.278	0.35751
2/21/2007 14:55:56	53756.0	88.5	5.58	5.605	2.224	0.34709
2/21/2007 14:55:58	53758.5	91.0	5.63	5.659	2.170	0.33641
2/21/2007 14:56:01	53761.5	94.0	5.69	5.718	2.111	0.32444
2/21/2007 14:56:04	53764.5	97.0	5.74	5.772	2.057	0.31319
2/21/2007 14:56:07	53767.5	100.0	5.79	5.821	2.008	0.30272

Slug Test P3-3

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:56:10	53770.5	103.0	5.85	5.873	1.956	0.29132
2/21/2007 14:56:13	53773.5	106.0	5.89	5.922	1.907	0.28030
2/21/2007 14:56:16	53776.5	109.0	5.94	5.971	1.858	0.26900
2/21/2007 14:56:19	53779.0	111.5	5.99	6.014	1.815	0.25883
2/21/2007 14:56:21	53781.5	114.0	6.03	6.056	1.773	0.24866
2/21/2007 14:56:23	53783.5	116.0	6.07	6.098	1.731	0.23825
2/21/2007 14:56:25	53785.5	118.0	6.11	6.138	1.691	0.22810
2/21/2007 14:56:28	53788.0	120.5	6.16	6.185	1.644	0.21585
2/21/2007 14:56:30	53790.5	123.0	6.2	6.225	1.604	0.20516
2/21/2007 14:56:33	53793.0	125.5	6.24	6.265	1.564	0.19419
2/21/2007 14:56:35	53795.5	128.0	6.28	6.307	1.522	0.18237
2/21/2007 14:56:38	53798.0	130.5	6.32	6.350	1.479	0.16992
2/21/2007 14:56:40	53800.0	132.5	6.36	6.385	1.444	0.15952
2/21/2007 14:56:42	53802.5	135.0	6.4	6.425	1.404	0.14732
2/21/2007 14:56:44	53804.5	137.0	6.43	6.458	1.371	0.13699
2/21/2007 14:56:46	53806.5	139.0	6.47	6.493	1.336	0.12576
2/21/2007 14:56:48	53808.5	141.0	6.51	6.533	1.296	0.11255
2/21/2007 14:56:50	53810.0	142.5	6.54	6.564	1.265	0.10204
2/21/2007 14:56:52	53812.0	144.5	6.57	6.601	1.228	0.08915
2/21/2007 14:56:54	53814.0	146.5	6.6	6.629	1.200	0.07913
2/21/2007 14:56:56	53816.5	149.0	6.63	6.660	1.169	0.06776
2/21/2007 14:56:59	53819.5	152.0	6.67	6.693	1.136	0.05533
2/21/2007 14:57:02	53822.0	154.5	6.69	6.721	1.108	0.04449
2/21/2007 14:57:04	53824.5	157.0	6.72	6.746	1.082	0.03418
2/21/2007 14:57:07	53827.5	160.0	6.75	6.772	1.056	0.02361
2/21/2007 14:57:11	53831.0	163.5	6.77	6.800	1.028	0.01194
2/21/2007 14:57:14	53834.5	167.0	6.8	6.828	1.000	-0.00005
2/21/2007 14:57:18	53838.0	170.5	6.83	6.852	0.976	-0.01060
2/21/2007 14:57:21	53841.0	173.5	6.85	6.878	0.950	-0.02232
2/21/2007 14:57:24	53844.5	177.0	6.88	6.903	0.925	-0.03390
2/21/2007 14:57:27	53847.5	180.0	6.9	6.925	0.903	-0.04436
2/21/2007 14:57:31	53851.0	183.5	6.92	6.946	0.882	-0.05457
2/21/2007 14:57:34	53854.5	187.0	6.94	6.969	0.859	-0.06605
2/21/2007 14:57:38	53858.0	190.5	6.96	6.990	0.838	-0.07679
2/21/2007 14:57:40	53860.5	193.0	6.98	7.011	0.817	-0.08782
2/21/2007 14:57:43	53863.5	196.0	7	7.030	0.798	-0.09803
2/21/2007 14:57:46	53866.0	198.5	7.02	7.049	0.779	-0.10850
2/21/2007 14:57:49	53869.5	202.0	7.04	7.068	0.760	-0.11922
2/21/2007 14:57:52	53872.5	205.0	7.06	7.087	0.741	-0.13021
2/21/2007 14:57:55	53875.0	207.5	7.08	7.105	0.723	-0.14089
2/21/2007 14:57:58	53878.5	211.0	7.1	7.124	0.704	-0.15245
2/21/2007 14:58:03	53883.0	215.5	7.12	7.143	0.685	-0.16433
2/21/2007 14:58:07	53887.0	219.5	7.13	7.159	0.669	-0.17459
2/21/2007 14:58:11	53891.0	223.5	7.15	7.175	0.653	-0.18510
2/21/2007 14:58:14	53894.5	227.0	7.16	7.190	0.638	-0.19519
2/21/2007 14:58:18	53898.0	230.5	7.18	7.206	0.622	-0.20622
2/21/2007 14:58:22	53902.0	234.5	7.2	7.222	0.606	-0.21753
2/21/2007 14:58:25	53905.5	238.0	7.21	7.239	0.589	-0.22988
2/21/2007 14:58:29	53909.0	241.5	7.23	7.253	0.575	-0.24033

Slug Test P3-3

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:58:32	53912.5	245.0	7.24	7.269	0.559	-0.25258
2/21/2007 14:58:36	53916.0	248.5	7.26	7.283	0.545	-0.26359
2/21/2007 14:58:40	53920.0	252.5	7.27	7.300	0.528	-0.27735
2/21/2007 14:58:43	53923.5	256.0	7.29	7.316	0.512	-0.29071
2/21/2007 14:58:47	53927.5	260.0	7.3	7.328	0.500	-0.30100
2/21/2007 14:58:50	53930.5	263.0	7.31	7.340	0.488	-0.31155
2/21/2007 14:58:54	53934.5	267.0	7.33	7.356	0.472	-0.32602
2/21/2007 14:58:58	53938.5	271.0	7.34	7.368	0.460	-0.33719
2/21/2007 14:59:01	53941.0	273.5	7.35	7.379	0.449	-0.34770
2/21/2007 14:59:04	53944.0	276.5	7.36	7.391	0.437	-0.35946
2/21/2007 14:59:07	53947.0	279.5	7.37	7.401	0.427	-0.36951
2/21/2007 14:59:11	53951.0	283.5	7.39	7.412	0.416	-0.38083
2/21/2007 14:59:13	53953.5	286.0	7.4	7.422	0.406	-0.39139
2/21/2007 14:59:16	53956.5	289.0	7.41	7.433	0.395	-0.40332
2/21/2007 14:59:19	53959.5	292.0	7.42	7.443	0.385	-0.41444
2/21/2007 14:59:21	53961.5	294.0	7.43	7.452	0.376	-0.42471
2/21/2007 14:59:24	53964.0	296.5	7.43	7.461	0.367	-0.43523
2/21/2007 14:59:26	53966.5	299.0	7.44	7.471	0.357	-0.44722
2/21/2007 14:59:29	53969.0	301.5	7.45	7.480	0.348	-0.45830
2/21/2007 14:59:32	53972.0	304.5	7.46	7.489	0.339	-0.46967
2/21/2007 14:59:35	53975.0	307.5	7.47	7.499	0.329	-0.48266
2/21/2007 14:59:38	53978.5	311.0	7.48	7.508	0.320	-0.49470
2/21/2007 14:59:41	53981.5	314.0	7.49	7.517	0.311	-0.50707
2/21/2007 14:59:46	53986.0	318.5	7.5	7.527	0.301	-0.52125
2/21/2007 14:59:48	53988.5	321.0	7.51	7.536	0.292	-0.53443
2/21/2007 14:59:51	53991.0	323.5	7.52	7.543	0.285	-0.54495
2/21/2007 14:59:54	53994.0	326.5	7.52	7.550	0.278	-0.55574
2/21/2007 14:59:57	53997.0	329.5	7.53	7.557	0.271	-0.56680
2/21/2007 15:00:00	54000.0	332.5	7.54	7.564	0.264	-0.57815
2/21/2007 15:00:02	54002.0	334.5	7.54	7.571	0.257	-0.58981
2/21/2007 15:00:05	54005.0	337.5	7.55	7.578	0.250	-0.60179
2/21/2007 15:00:08	54008.5	341.0	7.56	7.585	0.243	-0.61411
2/21/2007 15:00:11	54011.5	344.0	7.57	7.592	0.236	-0.62678
2/21/2007 15:00:14	54014.5	347.0	7.57	7.599	0.229	-0.63984
2/21/2007 15:00:18	54018.0	350.5	7.58	7.606	0.222	-0.65330
2/21/2007 15:00:20	54020.0	352.5	7.59	7.613	0.215	-0.66720
2/21/2007 15:00:22	54022.0	354.5	7.59	7.618	0.210	-0.67741
2/21/2007 15:00:25	54025.5	358.0	7.6	7.623	0.205	-0.68785
2/21/2007 15:00:28	54028.0	360.5	7.6	7.630	0.198	-0.70292
2/21/2007 15:00:31	54031.5	364.0	7.61	7.637	0.191	-0.71852
2/21/2007 15:00:35	54035.5	368.0	7.62	7.644	0.184	-0.73471
2/21/2007 15:00:39	54039.0	371.5	7.62	7.651	0.177	-0.75152
2/21/2007 15:00:43	54043.0	375.5	7.63	7.658	0.170	-0.76901
2/21/2007 15:00:44	54044.0	376.5	7.64	7.662	0.166	-0.77933
2/21/2007 15:00:44	54044.5	377.0	7.63	7.658	0.170	-0.76900
2/21/2007 15:00:46	54046.0	378.5	7.64	7.662	0.166	-0.77932
2/21/2007 15:00:49	54049.0	381.5	7.64	7.667	0.161	-0.79257
2/21/2007 15:00:51	54051.0	383.5	7.65	7.674	0.154	-0.81184
2/21/2007 15:00:53	54053.5	386.0	7.65	7.679	0.149	-0.82614

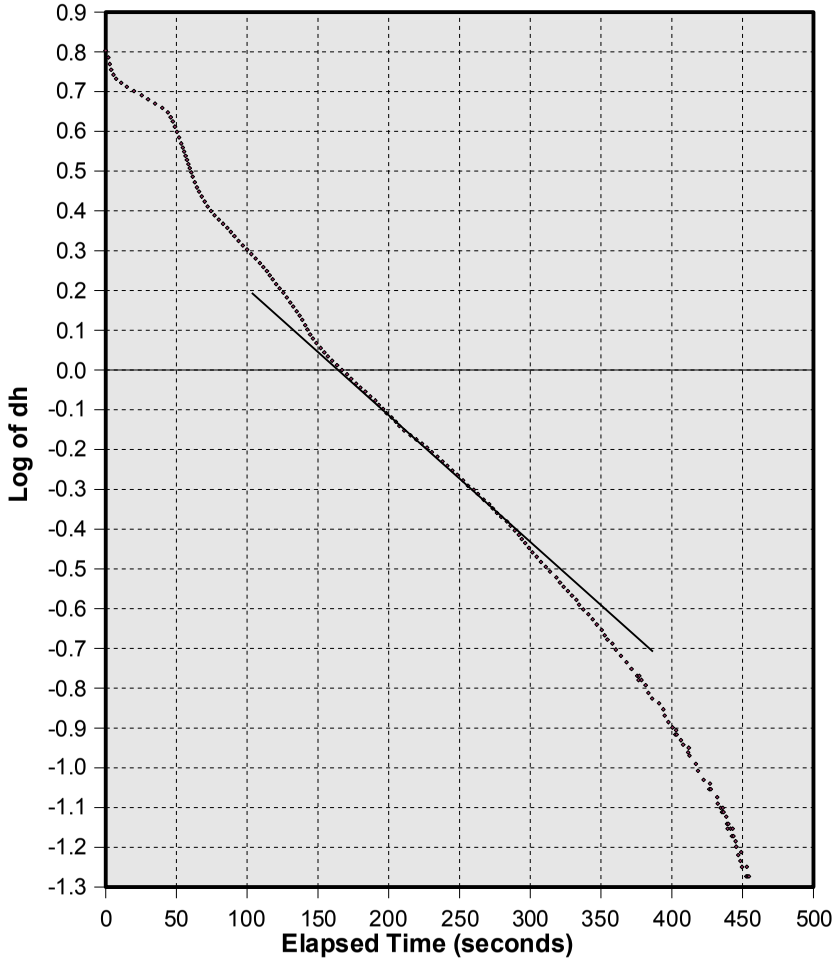
Slug Test P3-3

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:00:58	54058.5	391.0	7.66	7.683	0.145	-0.83792
2/21/2007 15:01:01	54061.5	394.0	7.66	7.688	0.140	-0.85312
2/21/2007 15:01:02	54062.5	395.0	7.67	7.693	0.135	-0.86888
2/21/2007 15:01:05	54065.0	397.5	7.67	7.698	0.130	-0.88523
2/21/2007 15:01:08	54068.0	400.5	7.68	7.702	0.126	-0.89876
2/21/2007 15:01:10	54070.0	402.5	7.68	7.707	0.121	-0.91630
2/21/2007 15:01:10	54070.5	403.0	7.68	7.704	0.124	-0.90568
2/21/2007 15:01:11	54071.0	403.5	7.68	7.707	0.121	-0.91629
2/21/2007 15:01:14	54074.0	406.5	7.68	7.711	0.117	-0.93084
2/21/2007 15:01:15	54075.5	408.0	7.69	7.714	0.114	-0.94209
2/21/2007 15:01:19	54079.0	411.5	7.69	7.719	0.109	-0.96150
2/21/2007 15:01:19	54079.5	412.0	7.69	7.716	0.112	-0.94973
2/21/2007 15:01:20	54080.0	412.5	7.69	7.721	0.107	-0.96952
2/21/2007 15:01:24	54084.5	417.0	7.7	7.726	0.102	-0.99022
2/21/2007 15:01:26	54086.0	418.5	7.7	7.730	0.098	-1.00753
2/21/2007 15:01:30	54090.0	422.5	7.71	7.735	0.093	-1.03018
2/21/2007 15:01:34	54094.0	426.5	7.71	7.740	0.088	-1.05407
2/21/2007 15:01:34	54094.5	427.0	7.71	7.737	0.091	-1.03956
2/21/2007 15:01:35	54095.0	427.5	7.71	7.740	0.088	-1.05407
2/21/2007 15:01:39	54099.5	432.0	7.72	7.744	0.084	-1.07416
2/21/2007 15:01:40	54100.0	432.5	7.72	7.747	0.081	-1.08990
2/21/2007 15:01:42	54102.0	434.5	7.72	7.749	0.079	-1.10070
2/21/2007 15:01:43	54103.0	435.5	7.72	7.751	0.077	-1.11178
2/21/2007 15:01:43	54103.5	436.0	7.72	7.749	0.079	-1.10068
2/21/2007 15:01:44	54104.0	436.5	7.72	7.751	0.077	-1.11177
2/21/2007 15:01:46	54106.0	438.5	7.73	7.753	0.075	-1.12314
2/21/2007 15:01:46	54106.5	439.0	7.73	7.756	0.072	-1.14079
2/21/2007 15:01:47	54107.0	439.5	7.73	7.758	0.070	-1.15296
2/21/2007 15:01:47	54107.5	440.0	7.73	7.756	0.072	-1.14078
2/21/2007 15:01:49	54109.0	441.5	7.73	7.758	0.070	-1.15294
2/21/2007 15:01:50	54110.0	442.5	7.73	7.761	0.067	-1.17187
2/21/2007 15:01:50	54110.5	443.0	7.73	7.758	0.070	-1.15293
2/21/2007 15:01:51	54111.0	443.5	7.73	7.761	0.067	-1.17186
2/21/2007 15:01:52	54112.5	445.0	7.74	7.763	0.065	-1.18494
2/21/2007 15:01:53	54113.0	445.5	7.74	7.765	0.063	-1.19844
2/21/2007 15:01:54	54114.5	447.0	7.74	7.768	0.060	-1.21950
2/21/2007 15:01:56	54116.0	448.5	7.74	7.770	0.058	-1.23413
2/21/2007 15:01:56	54116.5	449.0	7.74	7.767	0.061	-1.21234
2/21/2007 15:01:57	54117.0	449.5	7.75	7.772	0.056	-1.24927
2/21/2007 15:02:00	54120.0	452.5	7.75	7.775	0.053	-1.27300
2/21/2007 15:02:00	54120.5	453.0	7.75	7.772	0.056	-1.24923
2/21/2007 15:02:01	54121.0	453.5	7.75	7.775	0.053	-1.27299
2/21/2007 15:02:02	54122.0	454.5	7.75	7.775	0.053	-1.27297

Slug Test P3-3

Slug Test by Bouwer and Rice

Displacement Method:	Pump	
Well depth:	14.99	ft
Stick up height:	2.81	ft
Depth to sand pack (BGS):	4.00	ft
Depth to screened interval (BGS):	4.99	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	8.81	ft
Initial Head Change:	6.36	ft
Total well length:	17.80	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.2061	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	8.99	ft
L_e / r_w:	25.3835	
A (dimensionless):	2.410	
B (dimensionless):	0.399	
Drawdown at time = 0 (y_0):	1.11	ft
Drawdown at time = t (y_t):	0.37	ft
Elapsed Time between y_0 and y_t (t):	140.5	sec
Initial water column in well (L_w):	8.99	ft
$\ln(R_e/r_w)$ =	1.99	
K =	3.64E-05	ft/sec
	1.11E-03	**cm/sec**
	1148.84	ft/yr



Water above sand pack:	No
%Duration below sand pack:	100.00%
Water above screen:	No
%Duration below screen:	100.00%

Slug Test P3-4

Initial offset in logger reading (feet):	-0.017	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	0.000039		
Initial depth to water table (feet):	5.71		
Depth of probe below water table (feet):	3.085		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:00:18	46818.0	0.0	6.39	6.392	3.307	0.51945
2/21/2007 13:00:19	46819.0	1.0	6.27	6.272	3.187	0.50339
2/21/2007 13:00:20	46820.5	2.5	6.19	6.196	3.111	0.49290
2/21/2007 13:00:21	46821.5	3.5	6.05	6.055	2.970	0.47275
2/21/2007 13:00:23	46823.0	5.0	5.94	5.949	2.864	0.45696
2/21/2007 13:00:23	46823.5	5.5	5.86	5.866	2.781	0.44418
2/21/2007 13:00:24	46824.0	6.0	5.76	5.762	2.677	0.42762
2/21/2007 13:00:24	46824.5	6.5	5.62	5.626	2.541	0.40498
2/21/2007 13:00:25	46825.0	7.0	5.53	5.538	2.453	0.38966
2/21/2007 13:00:25	46825.5	7.5	5.45	5.452	2.368	0.37434
2/21/2007 13:00:26	46826.0	8.0	5.37	5.379	2.295	0.36074
2/21/2007 13:00:26	46826.5	8.5	5.3	5.306	2.222	0.34670
2/21/2007 13:00:27	46827.0	9.0	5.22	5.229	2.145	0.33137
2/21/2007 13:00:27	46827.5	9.5	5.17	5.172	2.088	0.31967
2/21/2007 13:00:28	46828.0	10.0	5.11	5.113	2.029	0.30722
2/21/2007 13:00:28	46828.5	10.5	5.05	5.059	1.975	0.29550
2/21/2007 13:00:29	46829.0	11.0	5	5.002	1.918	0.28277
2/21/2007 13:00:29	46829.5	11.5	4.95	4.957	1.873	0.27245
2/21/2007 13:00:30	46830.0	12.0	4.9	4.908	1.824	0.26093
2/21/2007 13:00:30	46830.5	12.5	4.86	4.865	1.781	0.25057
2/21/2007 13:00:31	46831.5	13.5	4.78	4.788	1.704	0.23136
2/21/2007 13:00:32	46832.5	14.5	4.7	4.707	1.623	0.21019
2/21/2007 13:00:33	46833.5	15.5	4.64	4.644	1.559	0.19298
2/21/2007 13:00:34	46834.0	16.0	4.6	4.608	1.523	0.18283
2/21/2007 13:00:35	46835.0	17.0	4.54	4.547	1.462	0.16507
2/21/2007 13:00:36	46836.0	18.0	4.49	4.493	1.408	0.14872
2/21/2007 13:00:37	46837.0	19.0	4.43	4.438	1.353	0.13141
2/21/2007 13:00:38	46838.0	20.0	4.39	4.396	1.311	0.11770
2/21/2007 13:00:39	46839.0	21.0	4.34	4.349	1.264	0.10184
2/21/2007 13:00:40	46840.0	22.0	4.3	4.308	1.223	0.08751
2/21/2007 13:00:41	46841.0	23.0	4.26	4.268	1.183	0.07305
2/21/2007 13:00:42	46842.0	24.0	4.23	4.233	1.148	0.06000
2/21/2007 13:00:43	46843.0	25.0	4.19	4.200	1.115	0.04732
2/21/2007 13:00:44	46844.0	26.0	4.16	4.167	1.082	0.03425
2/21/2007 13:00:45	46845.0	27.0	4.13	4.136	1.051	0.02161
2/21/2007 13:00:46	46846.0	28.0	4.1	4.105	1.020	0.00859
2/21/2007 13:00:47	46847.0	29.0	4.07	4.079	0.994	-0.00264
2/21/2007 13:00:48	46848.0	30.0	4.05	4.056	0.971	-0.01282
2/21/2007 13:00:49	46849.0	31.0	4.02	4.028	0.943	-0.02555
2/21/2007 13:00:50	46850.0	32.0	4	4.004	0.919	-0.03677
2/21/2007 13:00:51	46851.0	33.0	3.97	3.979	0.895	-0.04828
2/21/2007 13:00:52	46852.0	34.0	3.95	3.956	0.872	-0.05961
2/21/2007 13:00:53	46853.5	35.5	3.93	3.930	0.846	-0.07279
2/21/2007 13:00:55	46855.0	37.0	3.9	3.901	0.817	-0.08797

Slug Test P3-4

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:00:56	46856.5	38.5	3.87	3.875	0.791	-0.10206
2/21/2007 13:00:57	46857.5	39.5	3.85	3.857	0.773	-0.11208
2/21/2007 13:00:59	46859.0	41.0	3.83	3.833	0.748	-0.12582
2/21/2007 13:01:00	46860.5	42.5	3.81	3.812	0.727	-0.13822
2/21/2007 13:01:02	46862.0	44.0	3.79	3.790	0.705	-0.15159
2/21/2007 13:01:03	46863.5	45.5	3.77	3.772	0.687	-0.16285
2/21/2007 13:01:05	46865.0	47.0	3.75	3.750	0.665	-0.17702
2/21/2007 13:01:06	46866.5	48.5	3.73	3.731	0.646	-0.18965
2/21/2007 13:01:08	46868.0	50.0	3.71	3.715	0.630	-0.20058
2/21/2007 13:01:09	46869.5	51.5	3.69	3.698	0.613	-0.21249
2/21/2007 13:01:11	46871.0	53.0	3.68	3.682	0.597	-0.22402
2/21/2007 13:01:12	46872.5	54.5	3.66	3.665	0.580	-0.23661
2/21/2007 13:01:14	46874.0	56.0	3.64	3.649	0.564	-0.24881
2/21/2007 13:01:16	46876.0	58.0	3.63	3.632	0.547	-0.26217
2/21/2007 13:01:17	46877.5	59.5	3.61	3.617	0.533	-0.27348
2/21/2007 13:01:19	46879.0	61.0	3.6	3.603	0.519	-0.28509
2/21/2007 13:01:20	46880.5	62.5	3.59	3.591	0.507	-0.29531
2/21/2007 13:01:22	46882.0	64.0	3.58	3.579	0.495	-0.30577
2/21/2007 13:01:24	46884.0	66.0	3.56	3.565	0.480	-0.31831
2/21/2007 13:01:25	46885.5	67.5	3.55	3.553	0.468	-0.32935
2/21/2007 13:01:27	46887.5	69.5	3.53	3.537	0.452	-0.34452
2/21/2007 13:01:29	46889.5	71.5	3.52	3.525	0.440	-0.35627
2/21/2007 13:01:31	46891.0	73.0	3.51	3.515	0.430	-0.36631
2/21/2007 13:01:32	46892.5	74.5	3.5	3.504	0.419	-0.37762
2/21/2007 13:01:34	46894.0	76.0	3.49	3.492	0.407	-0.39030
2/21/2007 13:01:36	46896.5	78.5	3.48	3.480	0.395	-0.40340
2/21/2007 13:01:38	46898.5	80.5	3.47	3.471	0.386	-0.41350
2/21/2007 13:01:40	46900.0	82.0	3.46	3.461	0.376	-0.42497
2/21/2007 13:01:42	46902.0	84.0	3.45	3.451	0.367	-0.43559
2/21/2007 13:01:43	46903.5	85.5	3.44	3.441	0.357	-0.44766
2/21/2007 13:01:45	46905.5	87.5	3.43	3.432	0.348	-0.45886
2/21/2007 13:01:48	46908.0	90.0	3.42	3.422	0.338	-0.47166
2/21/2007 13:01:50	46910.0	92.0	3.41	3.413	0.328	-0.48350
2/21/2007 13:01:52	46912.0	94.0	3.4	3.404	0.319	-0.49567
2/21/2007 13:01:53	46913.5	95.5	3.39	3.394	0.309	-0.50957
2/21/2007 13:01:55	46915.5	97.5	3.38	3.387	0.302	-0.51963
2/21/2007 13:01:58	46918.5	100.5	3.38	3.380	0.295	-0.52997
2/21/2007 13:02:00	46920.5	102.5	3.37	3.373	0.288	-0.54052
2/21/2007 13:02:03	46923.0	105.0	3.36	3.366	0.281	-0.55135
2/21/2007 13:02:04	46924.5	106.5	3.35	3.356	0.271	-0.56719
2/21/2007 13:02:06	46926.5	108.5	3.35	3.349	0.264	-0.57869
2/21/2007 13:02:10	46930.0	112.0	3.34	3.341	0.257	-0.59060
2/21/2007 13:02:12	46932.5	114.5	3.33	3.334	0.250	-0.60278
2/21/2007 13:02:14	46934.0	116.0	3.33	3.327	0.243	-0.61524
2/21/2007 13:02:17	46937.0	119.0	3.32	3.320	0.235	-0.62817
2/21/2007 13:02:19	46939.0	121.0	3.31	3.313	0.228	-0.64143
2/21/2007 13:02:22	46942.0	124.0	3.3	3.306	0.221	-0.65519
2/21/2007 13:02:23	46943.5	125.5	3.3	3.301	0.216	-0.66523
2/21/2007 13:02:25	46945.5	127.5	3.29	3.296	0.211	-0.67556

Slug Test P3-4

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:02:28	46948.0	130.0	3.29	3.289	0.204	-0.69041
2/21/2007 13:02:31	46951.0	133.0	3.28	3.282	0.197	-0.70584
2/21/2007 13:02:33	46953.0	135.0	3.27	3.274	0.190	-0.72174
2/21/2007 13:02:36	46956.0	138.0	3.27	3.267	0.183	-0.73835
2/21/2007 13:02:37	46957.5	139.5	3.26	3.262	0.178	-0.75054
2/21/2007 13:02:39	46959.0	141.0	3.26	3.258	0.174	-0.76058
2/21/2007 13:02:42	46962.0	144.0	3.25	3.253	0.168	-0.77358
2/21/2007 13:02:43	46963.5	145.5	3.25	3.248	0.163	-0.78683
2/21/2007 13:02:45	46965.0	147.0	3.24	3.244	0.159	-0.79775
2/21/2007 13:02:47	46967.0	149.0	3.24	3.237	0.152	-0.81749
2/21/2007 13:02:48	46968.5	150.5	3.23	3.232	0.147	-0.83217
2/21/2007 13:02:49	46969.5	151.5	3.23	3.227	0.142	-0.84730
2/21/2007 13:02:53	46973.0	155.0	3.22	3.222	0.137	-0.86329
2/21/2007 13:02:58	46978.5	160.5	3.22	3.217	0.133	-0.87686
2/21/2007 13:03:00	46980.0	162.0	3.21	3.214	0.130	-0.88699
2/21/2007 13:03:03	46983.0	165.0	3.21	3.210	0.126	-0.90100
2/21/2007 13:03:03	46983.5	165.5	3.21	3.207	0.123	-0.91157
2/21/2007 13:03:04	46984.0	166.0	3.21	3.210	0.126	-0.90113
2/21/2007 13:03:04	46984.5	166.5	3.21	3.207	0.123	-0.91170
2/21/2007 13:03:07	46987.5	169.5	3.2	3.203	0.118	-0.92655
2/21/2007 13:03:08	46988.5	170.5	3.2	3.200	0.115	-0.93784
2/21/2007 13:03:10	46990.5	172.5	3.2	3.196	0.111	-0.95347
2/21/2007 13:03:12	46992.5	174.5	3.19	3.193	0.108	-0.96565
2/21/2007 13:03:13	46993.0	175.0	3.2	3.198	0.113	-0.94611
2/21/2007 13:03:14	46994.5	176.5	3.19	3.191	0.106	-0.97407
2/21/2007 13:03:18	46998.0	180.0	3.19	3.186	0.101	-0.99562
2/21/2007 13:03:19	46999.5	181.5	3.18	3.182	0.097	-1.01343
2/21/2007 13:03:21	47001.0	183.0	3.18	3.179	0.094	-1.02735
2/21/2007 13:03:24	47004.0	186.0	3.18	3.174	0.090	-1.04683
2/21/2007 13:03:25	47005.0	187.0	3.17	3.171	0.087	-1.06178
2/21/2007 13:03:26	47006.0	188.0	3.17	3.169	0.085	-1.07211
2/21/2007 13:03:30	47010.0	192.0	3.17	3.167	0.083	-1.08332
2/21/2007 13:03:31	47011.5	193.5	3.16	3.162	0.077	-1.11079
2/21/2007 13:03:32	47012.5	194.5	3.17	3.164	0.079	-1.09993
2/21/2007 13:03:33	47013.0	195.0	3.16	3.157	0.072	-1.14011
2/21/2007 13:03:33	47013.5	195.5	3.16	3.160	0.075	-1.12260
2/21/2007 13:03:35	47015.5	197.5	3.16	3.155	0.070	-1.15288
2/21/2007 13:03:36	47016.5	198.5	3.16	3.157	0.072	-1.14093
2/21/2007 13:03:37	47017.0	199.0	3.16	3.160	0.075	-1.12339
2/21/2007 13:03:37	47017.5	199.5	3.16	3.157	0.072	-1.14117
2/21/2007 13:03:38	47018.0	200.0	3.16	3.155	0.070	-1.15348
2/21/2007 13:03:40	47020.0	202.0	3.15	3.153	0.068	-1.16653
2/21/2007 13:03:44	47024.0	206.0	3.15	3.150	0.065	-1.18713
2/21/2007 13:03:45	47025.0	207.0	3.15	3.148	0.063	-1.20098
2/21/2007 13:03:46	47026.0	208.0	3.15	3.146	0.061	-1.21528
2/21/2007 13:03:46	47026.5	208.5	3.15	3.148	0.063	-1.20138
2/21/2007 13:03:47	47027.5	209.5	3.15	3.146	0.061	-1.21570
2/21/2007 13:03:49	47029.0	211.0	3.15	3.143	0.059	-1.23065
2/21/2007 13:03:50	47030.5	212.5	3.14	3.140	0.056	-1.25385

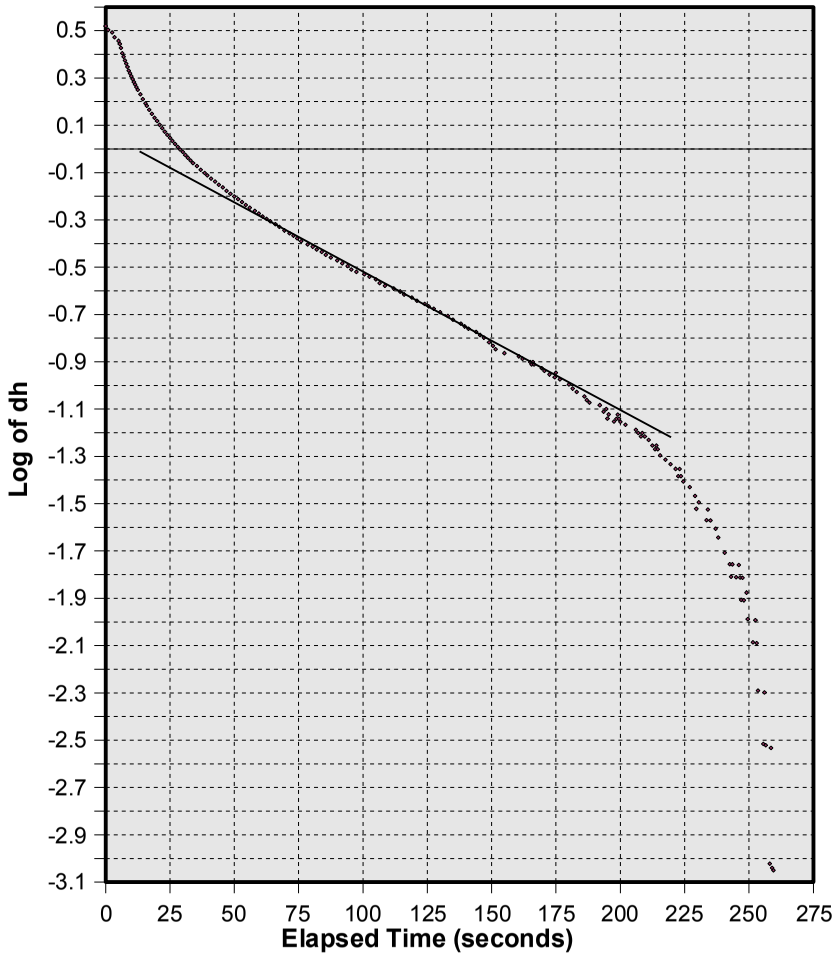
Slug Test P3-4

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:03:51	47031.5	213.5	3.14	3.138	0.054	-1.27004
2/21/2007 13:03:52	47032.0	214.0	3.14	3.140	0.056	-1.25431
2/21/2007 13:03:52	47032.5	214.5	3.14	3.138	0.054	-1.27036
2/21/2007 13:03:53	47033.5	215.5	3.14	3.135	0.051	-1.29568
2/21/2007 13:03:55	47035.5	217.5	3.14	3.133	0.049	-1.31389
2/21/2007 13:03:57	47037.5	219.5	3.13	3.131	0.046	-1.33289
2/21/2007 13:03:59	47039.5	221.5	3.13	3.129	0.044	-1.35277
2/21/2007 13:04:00	47040.5	222.5	3.13	3.126	0.041	-1.38358
2/21/2007 13:04:01	47041.0	223.0	3.13	3.129	0.044	-1.35335
2/21/2007 13:04:01	47041.5	223.5	3.13	3.126	0.041	-1.38399
2/21/2007 13:04:02	47042.5	224.5	3.13	3.124	0.039	-1.40598
2/21/2007 13:04:05	47045.0	227.0	3.12	3.122	0.037	-1.42983
2/21/2007 13:04:07	47047.0	229.0	3.12	3.119	0.034	-1.46738
2/21/2007 13:04:07	47047.5	229.5	3.12	3.115	0.030	-1.52187
2/21/2007 13:04:08	47048.5	230.5	3.12	3.117	0.032	-1.49443
2/21/2007 13:04:11	47051.5	233.5	3.11	3.112	0.027	-1.57004
2/21/2007 13:04:12	47052.0	234.0	3.12	3.115	0.030	-1.52443
2/21/2007 13:04:13	47053.0	235.0	3.11	3.112	0.027	-1.57099
2/21/2007 13:04:15	47055.0	237.0	3.11	3.109	0.025	-1.60598
2/21/2007 13:04:16	47056.0	238.0	3.11	3.107	0.023	-1.64329
2/21/2007 13:04:18	47058.5	240.5	3.11	3.104	0.020	-1.70691
2/21/2007 13:04:20	47060.5	242.5	3.11	3.102	0.018	-1.75550
2/21/2007 13:04:21	47061.0	243.0	3.1	3.100	0.016	-1.80856
2/21/2007 13:04:21	47061.5	243.5	3.11	3.102	0.018	-1.75647
2/21/2007 13:04:23	47063.0	245.0	3.1	3.100	0.015	-1.81076
2/21/2007 13:04:24	47064.0	246.0	3.11	3.102	0.017	-1.75891
2/21/2007 13:04:24	47064.5	246.5	3.1	3.100	0.015	-1.81242
2/21/2007 13:04:25	47065.0	247.0	3.1	3.097	0.012	-1.90720
2/21/2007 13:04:25	47065.5	247.5	3.1	3.100	0.015	-1.81353
2/21/2007 13:04:26	47066.0	248.0	3.1	3.097	0.012	-1.90858
2/21/2007 13:04:27	47067.0	249.0	3.1	3.098	0.013	-1.87602
2/21/2007 13:04:27	47067.5	249.5	3.1	3.095	0.010	-1.98783
2/21/2007 13:04:29	47069.5	251.5	3.1	3.093	0.008	-2.08589
2/21/2007 13:04:30	47070.5	252.5	3.1	3.095	0.010	-1.99284
2/21/2007 13:04:31	47071.0	253.0	3.1	3.093	0.008	-2.08902
2/21/2007 13:04:31	47071.5	253.5	3.09	3.090	0.005	-2.29014
2/21/2007 13:04:33	47073.5	255.5	3.09	3.088	0.003	-2.51592
2/21/2007 13:04:34	47074.0	256.0	3.09	3.090	0.005	-2.29854
2/21/2007 13:04:34	47074.5	256.5	3.09	3.088	0.003	-2.52156
2/21/2007 13:04:36	47076.0	258.0	3.09	3.086	0.001	-3.02218
2/21/2007 13:04:36	47076.5	258.5	3.09	3.088	0.003	-2.53305
2/21/2007 13:04:37	47077.0	259.0	3.09	3.086	0.001	-3.04052
2/21/2007 13:04:37	47077.5	259.5	3.09	3.086	0.001	-3.04999

Slug Test P3-4

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	14.83	ft
Stick up height:	2.97	ft
Depth to sand pack (BGS):	4.00	ft
Depth to screened interval (BGS):	4.83	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	5.71	ft
Initial Head Change:	3.31	ft
Total well length:	17.80	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	0.63	ft
Drawdown at time = t (y_t):	0.06	ft
Elapsed Time between y_0 and y_t (t):	155.5	sec
Initial water column in well (L_w):	12.09	ft
$\ln(R_e/r_w)$ =	2.06	
K =	1.04E-05	ft/sec
	3.18E-04	**cm/sec**
	328.71	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-5

Initial offset in logger reading (feet):	-0.010	Date:	02/20/2007
Offset increment in logger reading (feet/sec):	0.000080		
Initial depth to water table (feet):	5.23		
Depth of probe below water table (feet):	1.217		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:43:57	49437.5	0.0	4.52	4.514	3.297	0.51812
2/20/2007 13:43:58	49438.0	0.5	4.48	4.469	3.252	0.51215
2/20/2007 13:43:59	49439.0	1.5	4.42	4.416	3.199	0.50500
2/20/2007 13:43:59	49439.5	2.0	4.19	4.180	2.963	0.47171
2/20/2007 13:44:00	49440.0	2.5	3.99	3.984	2.767	0.44198
2/20/2007 13:44:00	49440.5	3.0	3.81	3.807	2.590	0.41327
2/20/2007 13:44:01	49441.0	3.5	3.65	3.645	2.429	0.38538
2/20/2007 13:44:01	49441.5	4.0	3.5	3.497	2.281	0.35807
2/20/2007 13:44:02	49442.0	4.5	3.36	3.357	2.141	0.33055
2/20/2007 13:44:02	49442.5	5.0	3.24	3.237	2.021	0.30549
2/20/2007 13:44:03	49443.0	5.5	3.13	3.121	1.905	0.27980
2/20/2007 13:44:03	49443.5	6.0	3.02	3.014	1.798	0.25468
2/20/2007 13:44:04	49444.0	6.5	2.92	2.917	1.701	0.23058
2/20/2007 13:44:04	49444.5	7.0	2.83	2.827	1.610	0.20696
2/20/2007 13:44:05	49445.0	7.5	2.75	2.741	1.524	0.18311
2/20/2007 13:44:05	49445.5	8.0	2.67	2.658	1.441	0.15878
2/20/2007 13:44:06	49446.0	8.5	2.59	2.585	1.368	0.13620
2/20/2007 13:44:06	49446.5	9.0	2.52	2.516	1.299	0.11372
2/20/2007 13:44:07	49447.0	9.5	2.46	2.449	1.232	0.09071
2/20/2007 13:44:07	49447.5	10.0	2.4	2.392	1.175	0.07013
2/20/2007 13:44:08	49448.0	10.5	2.34	2.333	1.116	0.04774
2/20/2007 13:44:08	49448.5	11.0	2.29	2.281	1.064	0.02701
2/20/2007 13:44:09	49449.0	11.5	2.24	2.233	1.016	0.00694
2/20/2007 13:44:09	49449.5	12.0	2.2	2.188	0.971	-0.01275
2/20/2007 13:44:10	49450.0	12.5	2.15	2.145	0.928	-0.03243
2/20/2007 13:44:10	49450.5	13.0	2.11	2.104	0.887	-0.05208
2/20/2007 13:44:11	49451.0	13.5	2.07	2.066	0.849	-0.07111
2/20/2007 13:44:11	49451.5	14.0	2.04	2.030	0.813	-0.08995
2/20/2007 13:44:12	49452.0	14.5	2	1.994	0.777	-0.10965
2/20/2007 13:44:12	49452.5	15.0	1.97	1.960	0.743	-0.12911
2/20/2007 13:44:13	49453.0	15.5	1.94	1.929	0.712	-0.14764
2/20/2007 13:44:13	49453.5	16.0	1.91	1.902	0.686	-0.16383
2/20/2007 13:44:14	49454.0	16.5	1.88	1.873	0.657	-0.18262
2/20/2007 13:44:14	49454.5	17.0	1.86	1.849	0.633	-0.19882
2/20/2007 13:44:15	49455.0	17.5	1.83	1.825	0.609	-0.21564
2/20/2007 13:44:15	49455.5	18.0	1.81	1.801	0.585	-0.23314
2/20/2007 13:44:16	49456.0	18.5	1.79	1.779	0.563	-0.24983
2/20/2007 13:44:16	49456.5	19.0	1.77	1.760	0.544	-0.26479
2/20/2007 13:44:17	49457.0	19.5	1.75	1.743	0.526	-0.27862
2/20/2007 13:44:17	49457.5	20.0	1.73	1.724	0.507	-0.29462
2/20/2007 13:44:18	49458.0	20.5	1.71	1.704	0.487	-0.31212
2/20/2007 13:44:18	49458.5	21.0	1.7	1.690	0.473	-0.32481
2/20/2007 13:44:19	49459.0	21.5	1.68	1.670	0.453	-0.34360
2/20/2007 13:44:19	49459.5	22.0	1.66	1.656	0.439	-0.35726

Slug Test P3-5

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:44:20	49460.0	22.5	1.65	1.644	0.427	-0.36933
2/20/2007 13:44:20	49460.5	23.0	1.64	1.631	0.414	-0.38279
2/20/2007 13:44:21	49461.0	23.5	1.63	1.619	0.402	-0.39560
2/20/2007 13:44:21	49461.5	24.0	1.61	1.605	0.388	-0.41104
2/20/2007 13:44:22	49462.0	24.5	1.6	1.595	0.378	-0.42242
2/20/2007 13:44:22	49462.5	25.0	1.59	1.583	0.366	-0.43647
2/20/2007 13:44:23	49463.0	25.5	1.58	1.573	0.356	-0.44855
2/20/2007 13:44:23	49463.5	26.0	1.57	1.563	0.346	-0.46098
2/20/2007 13:44:24	49464.0	26.5	1.56	1.553	0.336	-0.47377
2/20/2007 13:44:24	49464.5	27.0	1.55	1.539	0.322	-0.49231
2/20/2007 13:44:25	49465.0	27.5	1.54	1.529	0.312	-0.50607
2/20/2007 13:44:25	49465.5	28.0	1.53	1.522	0.305	-0.51599
2/20/2007 13:44:26	49466.0	28.5	1.52	1.513	0.297	-0.52760
2/20/2007 13:44:26	49466.5	29.0	1.51	1.503	0.287	-0.54255
2/20/2007 13:44:27	49467.0	29.5	1.51	1.498	0.282	-0.55025
2/20/2007 13:44:27	49467.5	30.0	1.5	1.493	0.277	-0.55809
2/20/2007 13:44:28	49468.0	30.5	1.49	1.481	0.265	-0.57741
2/20/2007 13:44:28	49468.5	31.0	1.49	1.476	0.260	-0.58577
2/20/2007 13:44:29	49469.0	31.5	1.48	1.471	0.255	-0.59428
2/20/2007 13:44:29	49469.5	32.0	1.47	1.461	0.244	-0.61176
2/20/2007 13:44:30	49470.0	32.5	1.47	1.456	0.239	-0.62081
2/20/2007 13:44:30	49470.5	33.0	1.46	1.451	0.234	-0.63005
2/20/2007 13:44:31	49471.0	33.5	1.46	1.446	0.229	-0.63949
2/20/2007 13:44:31	49471.5	34.0	1.45	1.441	0.224	-0.64914
2/20/2007 13:44:32	49472.0	34.5	1.45	1.436	0.219	-0.65901
2/20/2007 13:44:32	49472.5	35.0	1.44	1.431	0.214	-0.66911
2/20/2007 13:44:33	49473.0	35.5	1.44	1.426	0.209	-0.67945
2/20/2007 13:44:33	49473.5	36.0	1.43	1.424	0.207	-0.68370
2/20/2007 13:44:34	49474.0	36.5	1.43	1.416	0.199	-0.70089
2/20/2007 13:44:34	49474.5	37.0	1.42	1.411	0.194	-0.71203
2/20/2007 13:44:35	49475.0	37.5	1.42	1.409	0.192	-0.71662
2/20/2007 13:44:35	49475.5	38.0	1.42	1.406	0.189	-0.72355
2/20/2007 13:44:36	49476.0	38.5	1.41	1.401	0.184	-0.73529
2/20/2007 13:44:36	49476.5	39.0	1.41	1.399	0.182	-0.74013
2/20/2007 13:44:37	49477.0	39.5	1.4	1.393	0.176	-0.75479
2/20/2007 13:44:38	49478.0	40.5	1.4	1.388	0.171	-0.76752
2/20/2007 13:44:38	49478.5	41.0	1.4	1.385	0.169	-0.77274
2/20/2007 13:44:39	49479.0	41.5	1.39	1.382	0.166	-0.78064
2/20/2007 13:44:39	49479.5	42.0	1.39	1.377	0.161	-0.79405
2/20/2007 13:44:40	49480.0	42.5	1.38	1.374	0.158	-0.80234
2/20/2007 13:44:40	49480.5	43.0	1.38	1.372	0.156	-0.80800
2/20/2007 13:44:41	49481.0	43.5	1.38	1.367	0.151	-0.82230
2/20/2007 13:44:41	49481.5	44.0	1.37	1.364	0.148	-0.83116
2/20/2007 13:44:42	49482.0	44.5	1.37	1.362	0.145	-0.83721
2/20/2007 13:44:42	49482.5	45.0	1.37	1.359	0.142	-0.84638
2/20/2007 13:44:43	49483.0	45.5	1.36	1.354	0.137	-0.86203
2/20/2007 13:44:43	49483.5	46.0	1.36	1.352	0.135	-0.86852
2/20/2007 13:44:44	49484.5	47.0	1.36	1.351	0.134	-0.87200
2/20/2007 13:44:45	49485.0	47.5	1.36	1.349	0.132	-0.87865

Slug Test P3-5

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:44:45	49485.5	48.0	1.35	1.344	0.127	-0.89553
2/20/2007 13:44:46	49486.5	49.0	1.35	1.341	0.124	-0.90618
2/20/2007 13:44:47	49487.5	50.0	1.35	1.339	0.122	-0.91352
2/20/2007 13:44:48	49488.0	50.5	1.35	1.336	0.119	-0.92447
2/20/2007 13:44:48	49488.5	51.0	1.34	1.333	0.116	-0.93571
2/20/2007 13:44:49	49489.5	52.0	1.34	1.331	0.114	-0.94357
2/20/2007 13:44:50	49490.5	53.0	1.34	1.328	0.111	-0.95548
2/20/2007 13:44:51	49491.5	54.0	1.34	1.324	0.108	-0.96773
2/20/2007 13:44:52	49492.0	54.5	1.33	1.322	0.106	-0.97603
2/20/2007 13:44:52	49492.5	55.0	1.33	1.319	0.103	-0.98871
2/20/2007 13:44:54	49494.0	56.5	1.33	1.316	0.100	-1.00211
2/20/2007 13:44:55	49495.0	57.5	1.33	1.314	0.097	-1.01129
2/20/2007 13:44:56	49496.0	58.5	1.32	1.311	0.094	-1.02524
2/20/2007 13:44:56	49496.5	59.0	1.32	1.309	0.092	-1.03473
2/20/2007 13:44:57	49497.0	59.5	1.32	1.308	0.091	-1.03965
2/20/2007 13:44:58	49498.0	60.5	1.32	1.306	0.089	-1.04967
2/20/2007 13:44:59	49499.0	61.5	1.31	1.303	0.086	-1.06493
2/20/2007 13:44:59	49499.5	62.0	1.31	1.301	0.084	-1.07534
2/20/2007 13:45:00	49500.5	63.0	1.31	1.300	0.083	-1.08096
2/20/2007 13:45:01	49501.5	64.0	1.31	1.298	0.081	-1.09198
2/20/2007 13:45:03	49503.5	66.0	1.31	1.296	0.080	-1.09825
2/20/2007 13:45:04	49504.0	66.5	1.31	1.294	0.078	-1.10951
2/20/2007 13:45:04	49504.5	67.0	1.3	1.291	0.075	-1.12684
2/20/2007 13:45:05	49505.0	67.5	1.3	1.289	0.073	-1.13887
2/20/2007 13:45:06	49506.5	69.0	1.3	1.291	0.075	-1.12777
2/20/2007 13:45:07	49507.0	69.5	1.3	1.289	0.072	-1.13983
2/20/2007 13:45:07	49507.5	70.0	1.3	1.288	0.071	-1.14610
2/20/2007 13:45:08	49508.5	71.0	1.3	1.286	0.069	-1.15894
2/20/2007 13:45:09	49509.0	71.5	1.3	1.288	0.071	-1.14683
2/20/2007 13:45:10	49510.0	72.5	1.3	1.285	0.068	-1.16601
2/20/2007 13:45:11	49511.0	73.5	1.3	1.283	0.066	-1.17946
2/20/2007 13:45:11	49511.5	74.0	1.29	1.281	0.064	-1.19306
2/20/2007 13:45:12	49512.0	74.5	1.29	1.280	0.063	-1.20016
2/20/2007 13:45:12	49512.5	75.0	1.3	1.283	0.066	-1.18025
2/20/2007 13:45:13	49513.0	75.5	1.29	1.280	0.063	-1.20071
2/20/2007 13:45:14	49514.0	76.5	1.29	1.282	0.065	-1.18768
2/20/2007 13:45:14	49514.5	77.0	1.29	1.280	0.063	-1.20154
2/20/2007 13:45:16	49516.5	79.0	1.29	1.279	0.063	-1.20265
2/20/2007 13:45:17	49517.5	80.0	1.29	1.276	0.060	-1.22452
2/20/2007 13:45:19	49519.0	81.5	1.29	1.274	0.058	-1.24025
2/20/2007 13:45:19	49519.5	82.0	1.29	1.273	0.056	-1.24817
2/20/2007 13:45:20	49520.0	82.5	1.28	1.271	0.054	-1.26415
2/20/2007 13:45:20	49520.5	83.0	1.29	1.273	0.056	-1.24879
2/20/2007 13:45:21	49521.0	83.5	1.28	1.271	0.054	-1.26479
2/20/2007 13:45:23	49523.0	85.5	1.29	1.273	0.056	-1.25034
2/20/2007 13:45:25	49525.0	87.5	1.28	1.270	0.053	-1.27547
2/20/2007 13:45:25	49525.5	88.0	1.28	1.268	0.051	-1.29251
2/20/2007 13:45:27	49527.0	89.5	1.28	1.270	0.053	-1.27679
2/20/2007 13:45:28	49528.0	90.5	1.28	1.268	0.051	-1.29422

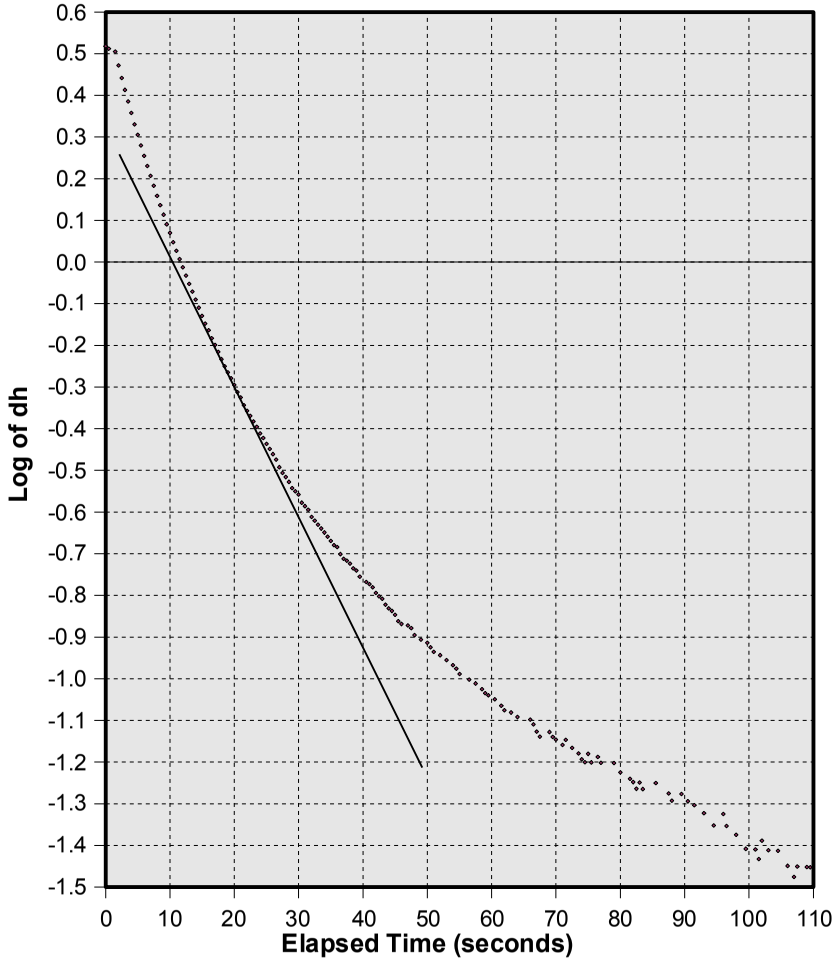
Slug Test P3-5

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:45:29	49529.0	91.5	1.28	1.266	0.050	-1.30356
2/20/2007 13:45:30	49530.5	93.0	1.28	1.264	0.048	-1.32249
2/20/2007 13:45:32	49532.0	94.5	1.28	1.261	0.044	-1.35194
2/20/2007 13:45:33	49533.5	96.0	1.28	1.264	0.047	-1.32468
2/20/2007 13:45:34	49534.0	96.5	1.28	1.261	0.044	-1.35350
2/20/2007 13:45:35	49535.5	98.0	1.27	1.259	0.042	-1.37480
2/20/2007 13:45:37	49537.0	99.5	1.27	1.256	0.039	-1.40817
2/20/2007 13:45:38	49538.5	101.0	1.27	1.256	0.039	-1.40950
2/20/2007 13:45:39	49539.0	101.5	1.27	1.254	0.037	-1.43287
2/20/2007 13:45:39	49539.5	102.0	1.27	1.258	0.041	-1.38861
2/20/2007 13:45:40	49540.5	103.0	1.27	1.256	0.039	-1.41129
2/20/2007 13:45:42	49542.0	104.5	1.27	1.255	0.039	-1.41264
2/20/2007 13:45:43	49543.5	106.0	1.27	1.252	0.036	-1.44918
2/20/2007 13:45:44	49544.5	107.0	1.27	1.250	0.033	-1.47537
2/20/2007 13:45:45	49545.0	107.5	1.27	1.252	0.035	-1.45065
2/20/2007 13:45:46	49546.5	109.0	1.27	1.252	0.035	-1.45213
2/20/2007 13:45:47	49547.0	109.5	1.27	1.252	0.035	-1.45262

Slug Test P3-5

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	15.70	ft
Stick up height:	2.80	ft
Depth to sand pack (BGS):	4.00	ft
Depth to screened interval (BGS):	5.70	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	5.23	ft
Initial Head Change:	3.30	ft
Total well length:	18.50	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	0.78	ft
Drawdown at time = t (y_t):	0.35	ft
Elapsed Time between y_0 and y_t (t):	11.5	sec
Initial water column in well (L_w):	13.27	ft
$\ln(R_e/r_w)$ =	2.10	
K =	5.14E-05	ft/sec
	1.57E-03	**cm/sec**
	1619.59	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-6S

Initial offset in logger reading (feet):	0.215	Date:	02/20/2007
Offset increment in logger reading (feet/sec):	-0.000165		
Initial depth to water table (feet):	5.07		
Depth of probe below water table (feet):	0.851		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 12:20:55	44455.0	0.0	4.69	4.491	3.640	0.56108
2/20/2007 12:20:55	44455.5	0.5	4.61	4.409	3.558	0.55120
2/20/2007 12:20:56	44456.0	1.0	4.5	4.301	3.450	0.53782
2/20/2007 12:20:56	44456.5	1.5	4.37	4.169	3.318	0.52089
2/20/2007 12:20:57	44457.0	2.0	4.25	4.052	3.201	0.50531
2/20/2007 12:20:57	44457.5	2.5	4.15	3.951	3.100	0.49140
2/20/2007 12:20:58	44458.0	3.0	4.06	3.857	3.006	0.47804
2/20/2007 12:20:58	44458.5	3.5	3.97	3.770	2.919	0.46530
2/20/2007 12:20:59	44459.0	4.0	3.89	3.690	2.840	0.45324
2/20/2007 12:20:59	44459.5	4.5	3.82	3.618	2.767	0.44194
2/20/2007 12:21:00	44460.0	5.0	3.74	3.546	2.695	0.43051
2/20/2007 12:21:00	44460.5	5.5	3.68	3.478	2.627	0.41942
2/20/2007 12:21:01	44461.0	6.0	3.62	3.417	2.566	0.40923
2/20/2007 12:21:01	44461.5	6.5	3.55	3.355	2.504	0.39862
2/20/2007 12:21:02	44462.0	7.0	3.5	3.301	2.450	0.38917
2/20/2007 12:21:02	44462.5	7.5	3.45	3.248	2.397	0.37968
2/20/2007 12:21:03	44463.0	8.0	3.4	3.203	2.352	0.37147
2/20/2007 12:21:03	44463.5	8.5	3.35	3.152	2.301	0.36196
2/20/2007 12:21:04	44464.0	9.0	3.31	3.110	2.259	0.35398
2/20/2007 12:21:04	44464.5	9.5	3.26	3.065	2.214	0.34526
2/20/2007 12:21:05	44465.0	10.0	3.22	3.022	2.171	0.33676
2/20/2007 12:21:05	44465.5	10.5	3.18	2.983	2.132	0.32870
2/20/2007 12:21:06	44466.0	11.0	3.14	2.944	2.093	0.32070
2/20/2007 12:21:06	44466.5	11.5	3.1	2.906	2.055	0.31276
2/20/2007 12:21:07	44467.0	12.0	3.07	2.870	2.019	0.30510
2/20/2007 12:21:07	44467.5	12.5	3.03	2.835	1.984	0.29752
2/20/2007 12:21:08	44468.0	13.0	3	2.799	1.948	0.28959
2/20/2007 12:21:08	44468.5	13.5	2.96	2.767	1.916	0.28241
2/20/2007 12:21:09	44469.0	14.0	2.93	2.736	1.885	0.27535
2/20/2007 12:21:09	44469.5	14.5	2.9	2.706	1.855	0.26840
2/20/2007 12:21:10	44470.0	15.0	2.87	2.676	1.825	0.26134
2/20/2007 12:21:10	44470.5	15.5	2.84	2.645	1.794	0.25392
2/20/2007 12:21:11	44471.0	16.0	2.82	2.620	1.769	0.24785
2/20/2007 12:21:11	44471.5	16.5	2.79	2.595	1.744	0.24144
2/20/2007 12:21:12	44472.0	17.0	2.76	2.568	1.717	0.23468
2/20/2007 12:21:12	44472.5	17.5	2.74	2.540	1.689	0.22756
2/20/2007 12:21:13	44473.0	18.0	2.71	2.518	1.667	0.22189
2/20/2007 12:21:13	44473.5	18.5	2.69	2.495	1.644	0.21588
2/20/2007 12:21:14	44474.0	19.0	2.67	2.471	1.620	0.20951
2/20/2007 12:21:14	44474.5	19.5	2.64	2.442	1.591	0.20169
2/20/2007 12:21:15	44475.0	20.0	2.62	2.421	1.570	0.19594
2/20/2007 12:21:15	44475.5	20.5	2.59	2.391	1.540	0.18759
2/20/2007 12:21:16	44476.0	21.0	2.57	2.372	1.521	0.18222
2/20/2007 12:21:16	44476.5	21.5	2.55	2.351	1.500	0.17621

Slug Test P3-6S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 12:21:17	44477.0	22.0	2.53	2.330	1.479	0.17011
2/20/2007 12:21:17	44477.5	22.5	2.5	2.308	1.457	0.16333
2/20/2007 12:21:18	44478.0	23.0	2.48	2.288	1.437	0.15735
2/20/2007 12:21:18	44478.5	23.5	2.47	2.270	1.419	0.15190
2/20/2007 12:21:19	44479.0	24.0	2.44	2.248	1.397	0.14514
2/20/2007 12:21:19	44479.5	24.5	2.43	2.230	1.379	0.13953
2/20/2007 12:21:20	44480.0	25.0	2.41	2.213	1.362	0.13417
2/20/2007 12:21:20	44480.5	25.5	2.39	2.194	1.343	0.12810
2/20/2007 12:21:21	44481.0	26.0	2.37	2.173	1.322	0.12128
2/20/2007 12:21:22	44482.0	27.0	2.34	2.145	1.294	0.11204
2/20/2007 12:21:22	44482.5	27.5	2.32	2.129	1.278	0.10666
2/20/2007 12:21:23	44483.0	28.0	2.31	2.110	1.259	0.10019
2/20/2007 12:21:23	44483.5	28.5	2.29	2.092	1.241	0.09362
2/20/2007 12:21:24	44484.5	29.5	2.26	2.067	1.216	0.08483
2/20/2007 12:21:25	44485.0	30.0	2.25	2.053	1.202	0.07983
2/20/2007 12:21:25	44485.5	30.5	2.23	2.034	1.183	0.07294
2/20/2007 12:21:26	44486.0	31.0	2.21	2.019	1.168	0.06743
2/20/2007 12:21:26	44486.5	31.5	2.2	2.005	1.154	0.06223
2/20/2007 12:21:27	44487.0	32.0	2.19	1.991	1.140	0.05696
2/20/2007 12:21:27	44487.5	32.5	2.17	1.976	1.125	0.05124
2/20/2007 12:21:28	44488.5	33.5	2.14	1.950	1.099	0.04115
2/20/2007 12:21:29	44489.0	34.0	2.13	1.936	1.085	0.03562
2/20/2007 12:21:30	44490.0	35.0	2.11	1.912	1.061	0.02556
2/20/2007 12:21:31	44491.0	36.0	2.08	1.889	1.038	0.01611
2/20/2007 12:21:31	44491.5	36.5	2.07	1.877	1.026	0.01110
2/20/2007 12:21:32	44492.0	37.0	2.06	1.863	1.012	0.00516
2/20/2007 12:21:33	44493.0	38.0	2.03	1.841	0.990	-0.00431
2/20/2007 12:21:33	44493.5	38.5	2.02	1.829	0.978	-0.00957
2/20/2007 12:21:34	44494.0	39.0	2.01	1.817	0.966	-0.01489
2/20/2007 12:21:34	44494.5	39.5	2	1.803	0.952	-0.02119
2/20/2007 12:21:35	44495.0	40.0	1.98	1.786	0.935	-0.02898
2/20/2007 12:21:35	44495.5	40.5	1.97	1.772	0.922	-0.03549
2/20/2007 12:21:36	44496.5	41.5	1.95	1.762	0.911	-0.04062
2/20/2007 12:21:37	44497.5	42.5	1.94	1.748	0.897	-0.04727
2/20/2007 12:21:38	44498.0	43.0	1.92	1.732	0.881	-0.05505
2/20/2007 12:21:39	44499.0	44.0	1.91	1.713	0.862	-0.06443
2/20/2007 12:21:39	44499.5	44.5	1.89	1.702	0.851	-0.06997
2/20/2007 12:21:40	44500.5	45.5	1.88	1.687	0.836	-0.07760
2/20/2007 12:21:41	44501.0	46.0	1.87	1.673	0.822	-0.08489
2/20/2007 12:21:42	44502.0	47.0	1.85	1.657	0.806	-0.09387
2/20/2007 12:21:43	44503.0	48.0	1.83	1.640	0.789	-0.10304
2/20/2007 12:21:43	44503.5	48.5	1.82	1.628	0.777	-0.10966
2/20/2007 12:21:44	44504.5	49.5	1.81	1.616	0.765	-0.11632
2/20/2007 12:21:45	44505.5	50.5	1.8	1.604	0.753	-0.12309
2/20/2007 12:21:46	44506.5	51.5	1.77	1.579	0.728	-0.13765
2/20/2007 12:21:48	44508.0	53.0	1.76	1.568	0.717	-0.14472
2/20/2007 12:21:49	44509.0	54.0	1.74	1.551	0.700	-0.15504
2/20/2007 12:21:50	44510.0	55.0	1.73	1.540	0.689	-0.16182
2/20/2007 12:21:50	44510.5	55.5	1.72	1.528	0.677	-0.16940

Slug Test P3-6S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 12:21:51	44511.5	56.5	1.71	1.515	0.664	-0.17771
2/20/2007 12:21:52	44512.5	57.5	1.7	1.505	0.654	-0.18419
2/20/2007 12:21:53	44513.0	58.0	1.69	1.496	0.645	-0.19015
2/20/2007 12:21:54	44514.0	59.0	1.67	1.482	0.631	-0.20025
2/20/2007 12:21:55	44515.5	60.5	1.66	1.470	0.619	-0.20842
2/20/2007 12:21:56	44516.5	61.5	1.65	1.462	0.611	-0.21395
2/20/2007 12:21:57	44517.5	62.5	1.64	1.446	0.595	-0.22535
2/20/2007 12:21:59	44519.0	64.0	1.63	1.436	0.585	-0.23253
2/20/2007 12:21:59	44519.5	64.5	1.62	1.429	0.579	-0.23769
2/20/2007 12:22:00	44520.5	65.5	1.61	1.422	0.571	-0.24361
2/20/2007 12:22:01	44521.0	66.0	1.6	1.415	0.564	-0.24891
2/20/2007 12:22:02	44522.0	67.0	1.59	1.405	0.554	-0.25655
2/20/2007 12:22:03	44523.0	68.0	1.58	1.396	0.545	-0.26353
2/20/2007 12:22:04	44524.5	69.5	1.58	1.387	0.536	-0.27056
2/20/2007 12:22:05	44525.0	70.0	1.57	1.380	0.529	-0.27620
2/20/2007 12:22:06	44526.5	71.5	1.56	1.369	0.518	-0.28595
2/20/2007 12:22:08	44528.0	73.0	1.55	1.360	0.509	-0.29336
2/20/2007 12:22:08	44528.5	73.5	1.54	1.351	0.500	-0.30103
2/20/2007 12:22:09	44529.5	74.5	1.53	1.345	0.494	-0.30613
2/20/2007 12:22:10	44530.5	75.5	1.52	1.337	0.486	-0.31307
2/20/2007 12:22:12	44532.0	77.0	1.52	1.329	0.478	-0.32096
2/20/2007 12:22:13	44533.0	78.0	1.51	1.322	0.471	-0.32722
2/20/2007 12:22:14	44534.0	79.0	1.5	1.314	0.463	-0.33451
2/20/2007 12:22:15	44535.0	80.0	1.49	1.306	0.455	-0.34192
2/20/2007 12:22:16	44536.0	81.0	1.48	1.297	0.446	-0.35044
2/20/2007 12:22:17	44537.5	82.5	1.48	1.290	0.439	-0.35706
2/20/2007 12:22:18	44538.5	83.5	1.47	1.282	0.431	-0.36588
2/20/2007 12:22:19	44539.5	84.5	1.46	1.275	0.424	-0.37282
2/20/2007 12:22:20	44540.0	85.0	1.45	1.269	0.418	-0.37893
2/20/2007 12:22:21	44541.0	86.0	1.45	1.261	0.410	-0.38715
2/20/2007 12:22:22	44542.0	87.0	1.44	1.254	0.403	-0.39445
2/20/2007 12:22:22	44542.5	87.5	1.43	1.249	0.398	-0.39978
2/20/2007 12:22:24	44544.0	89.0	1.43	1.244	0.393	-0.40610
2/20/2007 12:22:25	44545.0	90.0	1.42	1.239	0.388	-0.41148
2/20/2007 12:22:26	44546.0	91.0	1.42	1.232	0.381	-0.41920
2/20/2007 12:22:27	44547.0	92.0	1.41	1.226	0.375	-0.42591
2/20/2007 12:22:28	44548.0	93.0	1.4	1.219	0.368	-0.43389
2/20/2007 12:22:29	44549.0	94.0	1.4	1.212	0.361	-0.44203
2/20/2007 12:22:30	44550.0	95.0	1.39	1.207	0.357	-0.44788
2/20/2007 12:22:31	44551.0	96.0	1.38	1.201	0.350	-0.45628
2/20/2007 12:22:31	44551.5	96.5	1.37	1.186	0.335	-0.47522
2/20/2007 12:22:32	44552.0	97.0	1.38	1.192	0.341	-0.46740
2/20/2007 12:22:33	44553.5	98.5	1.37	1.186	0.335	-0.47479
2/20/2007 12:22:34	44554.0	99.0	1.36	1.178	0.327	-0.48517
2/20/2007 12:22:35	44555.0	100.0	1.37	1.185	0.334	-0.47576
2/20/2007 12:22:35	44555.5	100.5	1.36	1.176	0.325	-0.48750
2/20/2007 12:22:38	44558.0	103.0	1.35	1.171	0.320	-0.49502
2/20/2007 12:22:39	44559.5	104.5	1.35	1.165	0.314	-0.50290
2/20/2007 12:22:40	44560.5	105.5	1.34	1.159	0.308	-0.51105

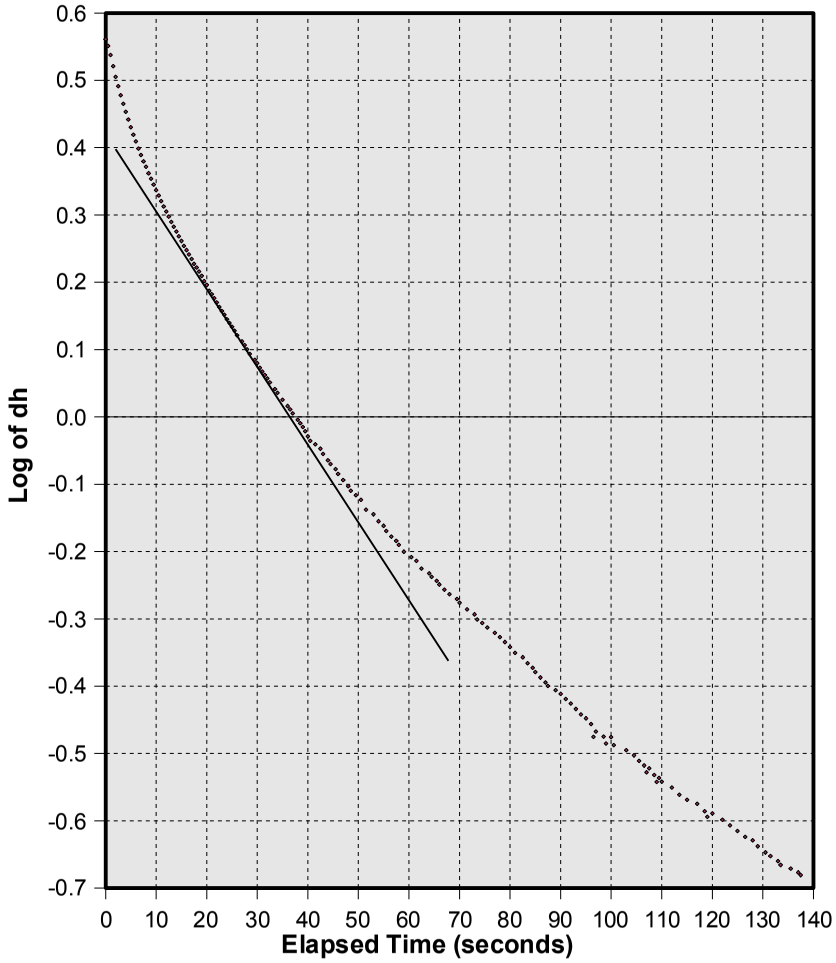
Slug Test P3-6S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 12:22:41	44561.5	106.5	1.34	1.154	0.303	-0.51791
2/20/2007 12:22:42	44562.0	107.0	1.33	1.147	0.297	-0.52793
2/20/2007 12:22:42	44562.5	107.5	1.33	1.152	0.301	-0.52199
2/20/2007 12:22:43	44563.5	108.5	1.33	1.145	0.294	-0.53197
2/20/2007 12:22:44	44564.0	109.0	1.32	1.138	0.287	-0.54232
2/20/2007 12:22:44	44564.5	109.5	1.32	1.142	0.291	-0.53619
2/20/2007 12:22:45	44565.0	110.0	1.32	1.138	0.287	-0.54207
2/20/2007 12:22:47	44567.0	112.0	1.31	1.132	0.281	-0.55074
2/20/2007 12:22:48	44568.5	113.5	1.31	1.126	0.275	-0.56129
2/20/2007 12:22:50	44570.0	115.0	1.3	1.121	0.270	-0.56887
2/20/2007 12:22:52	44572.0	117.0	1.3	1.117	0.266	-0.57481
2/20/2007 12:22:53	44573.5	118.5	1.29	1.110	0.259	-0.58597
2/20/2007 12:22:54	44574.0	119.0	1.29	1.105	0.255	-0.59428
2/20/2007 12:22:55	44575.0	120.0	1.29	1.109	0.258	-0.58891
2/20/2007 12:22:57	44577.0	122.0	1.28	1.103	0.252	-0.59858
2/20/2007 12:22:58	44578.5	123.5	1.28	1.098	0.247	-0.60684
2/20/2007 12:23:00	44580.0	125.0	1.27	1.093	0.243	-0.61527
2/20/2007 12:23:01	44581.5	126.5	1.27	1.089	0.238	-0.62386
2/20/2007 12:23:03	44583.0	128.0	1.26	1.086	0.235	-0.62892
2/20/2007 12:23:04	44584.0	129.0	1.26	1.081	0.230	-0.63795
2/20/2007 12:23:05	44585.5	130.5	1.25	1.076	0.225	-0.64701
2/20/2007 12:23:06	44586.5	131.5	1.25	1.074	0.223	-0.65250
2/20/2007 12:23:08	44588.0	133.0	1.25	1.070	0.219	-0.65989
2/20/2007 12:23:08	44588.5	133.5	1.24	1.067	0.216	-0.66572
2/20/2007 12:23:10	44590.5	135.5	1.24	1.064	0.213	-0.67112
2/20/2007 12:23:12	44592.0	137.0	1.24	1.061	0.210	-0.67676
2/20/2007 12:23:12	44592.5	137.5	1.24	1.060	0.209	-0.68073

Slug Test P3-6S

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	19.59	ft
Stick up height:	3.15	ft
Depth to sand pack (BGS):	8.25	ft
Depth to screened interval (BGS):	9.59	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	5.07	ft
Initial Head Change:	3.64	ft
Total well length:	22.74	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.64	ft
Drawdown at time = t (y_t):	0.75	ft
Elapsed Time between y_0 and y_t (t):	32	sec
Initial water column in well (L_w):	17.67	ft
$\ln(R_e/r_w)$ =	2.23	
K =	1.89E-05	ft/sec
	5.75E-04	**cm/sec**
	594.90	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-6D

Initial offset in logger reading (feet):	0.023	Date:	02/20/2007
Offset increment in logger reading (feet/sec):	0.000006		
Initial depth to water table (feet):	5.81		
Depth of probe below water table (feet):	7.197		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 11:00:14	39614.0	0.0	1.82	1.790	5.407	0.73292
2/20/2007 11:00:15	39615.0	1.0	2	1.976	5.221	0.71772
2/20/2007 11:00:16	39616.0	2.0	2.14	2.110	5.087	0.70643
2/20/2007 11:00:18	39618.0	4.0	2.26	2.236	4.961	0.69553
2/20/2007 11:00:20	39620.5	6.5	2.38	2.354	4.843	0.68508
2/20/2007 11:00:23	39623.5	9.5	2.5	2.474	4.723	0.67418
2/20/2007 11:00:26	39626.5	12.5	2.61	2.582	4.615	0.66414
2/20/2007 11:00:30	39630.0	16.0	2.72	2.697	4.500	0.65318
2/20/2007 11:00:33	39633.5	19.5	2.83	2.805	4.392	0.64263
2/20/2007 11:00:37	39637.0	23.0	2.94	2.909	4.288	0.63223
2/20/2007 11:00:40	39640.5	26.5	3.03	3.007	4.190	0.62219
2/20/2007 11:00:44	39644.5	30.5	3.14	3.118	4.079	0.61053
2/20/2007 11:00:48	39648.5	34.5	3.25	3.219	3.978	0.59964
2/20/2007 11:00:52	39652.5	38.5	3.34	3.310	3.887	0.58959
2/20/2007 11:00:56	39656.5	42.5	3.44	3.411	3.786	0.57816
2/20/2007 11:01:00	39660.5	46.5	3.53	3.500	3.697	0.56783
2/20/2007 11:01:04	39664.5	50.5	3.62	3.594	3.603	0.55665
2/20/2007 11:01:08	39668.5	54.5	3.71	3.680	3.517	0.54616
2/20/2007 11:01:13	39673.0	59.0	3.8	3.769	3.428	0.53503
2/20/2007 11:01:17	39677.0	63.0	3.88	3.853	3.344	0.52426
2/20/2007 11:01:21	39681.0	67.0	3.96	3.930	3.267	0.51415
2/20/2007 11:01:25	39685.5	71.5	4.04	4.012	3.185	0.50311
2/20/2007 11:01:29	39689.5	75.5	4.11	4.087	3.110	0.49276
2/20/2007 11:01:34	39694.0	80.0	4.19	4.166	3.031	0.48159
2/20/2007 11:01:38	39698.5	84.5	4.26	4.236	2.961	0.47145
2/20/2007 11:01:43	39703.0	89.0	4.34	4.311	2.886	0.46031
2/20/2007 11:01:47	39707.5	93.5	4.41	4.385	2.812	0.44904
2/20/2007 11:01:51	39711.5	97.5	4.48	4.451	2.746	0.43873
2/20/2007 11:01:56	39716.0	102.0	4.54	4.516	2.681	0.42833
2/20/2007 11:02:00	39720.5	106.5	4.61	4.581	2.616	0.41767
2/20/2007 11:02:05	39725.0	111.0	4.67	4.642	2.555	0.40743
2/20/2007 11:02:09	39729.5	115.5	4.73	4.707	2.490	0.39625
2/20/2007 11:02:14	39734.0	120.0	4.79	4.766	2.431	0.38584
2/20/2007 11:02:18	39738.5	124.5	4.85	4.824	2.373	0.37536
2/20/2007 11:02:23	39743.0	129.0	4.91	4.880	2.317	0.36499
2/20/2007 11:02:27	39747.5	133.5	4.96	4.933	2.264	0.35495
2/20/2007 11:02:32	39752.5	138.5	5.02	4.991	2.206	0.34369
2/20/2007 11:02:37	39757.5	143.5	5.07	5.042	2.155	0.33354
2/20/2007 11:02:42	39762.0	148.0	5.12	5.094	2.103	0.32294
2/20/2007 11:02:47	39767.0	153.0	5.17	5.145	2.053	0.31228
2/20/2007 11:02:52	39772.5	158.5	5.22	5.198	2.000	0.30093
2/20/2007 11:02:57	39777.0	163.0	5.27	5.244	1.953	0.29060
2/20/2007 11:03:02	39782.0	168.0	5.32	5.290	1.907	0.28026
2/20/2007 11:03:06	39786.5	172.5	5.36	5.334	1.863	0.27012

Slug Test P3-6D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 11:03:11	39791.5	177.5	5.41	5.379	1.818	0.25951
2/20/2007 11:03:17	39797.0	183.0	5.45	5.423	1.774	0.24888
2/20/2007 11:03:22	39802.5	188.5	5.5	5.469	1.728	0.23747
2/20/2007 11:03:27	39807.5	193.5	5.54	5.513	1.684	0.22628
2/20/2007 11:03:33	39813.0	199.0	5.58	5.553	1.644	0.21584
2/20/2007 11:03:38	39818.0	204.0	5.62	5.592	1.605	0.20542
2/20/2007 11:03:43	39823.0	209.0	5.66	5.630	1.567	0.19502
2/20/2007 11:03:48	39828.0	214.0	5.69	5.667	1.530	0.18465
2/20/2007 11:03:54	39834.0	220.0	5.73	5.707	1.490	0.17316
2/20/2007 11:03:59	39839.5	225.5	5.77	5.744	1.453	0.16225
2/20/2007 11:04:05	39845.0	231.0	5.81	5.781	1.416	0.15105
2/20/2007 11:04:10	39850.0	236.0	5.84	5.814	1.383	0.14082
2/20/2007 11:04:16	39856.0	242.0	5.88	5.848	1.349	0.13002
2/20/2007 11:04:22	39862.5	248.5	5.91	5.881	1.316	0.11928
2/20/2007 11:04:28	39868.0	254.0	5.94	5.911	1.286	0.10928
2/20/2007 11:04:34	39874.0	260.0	5.97	5.941	1.256	0.09904
2/20/2007 11:04:40	39880.0	266.0	6	5.974	1.223	0.08749
2/20/2007 11:04:46	39886.0	272.0	6.03	6.002	1.195	0.07745
2/20/2007 11:04:51	39891.5	277.5	6.06	6.030	1.167	0.06716
2/20/2007 11:04:56	39896.5	282.5	6.09	6.058	1.139	0.05663
2/20/2007 11:05:03	39903.5	289.5	6.11	6.086	1.111	0.04584
2/20/2007 11:05:10	39910.0	296.0	6.14	6.113	1.084	0.03517
2/20/2007 11:05:17	39917.0	303.0	6.17	6.139	1.058	0.02465
2/20/2007 11:05:23	39923.0	309.0	6.19	6.165	1.032	0.01387
2/20/2007 11:05:30	39930.0	316.0	6.22	6.190	1.007	0.00324
2/20/2007 11:05:36	39936.5	322.5	6.24	6.216	0.982	-0.00810
2/20/2007 11:05:43	39943.0	329.0	6.27	6.238	0.959	-0.01838
2/20/2007 11:05:49	39949.5	335.5	6.29	6.262	0.935	-0.02937
2/20/2007 11:05:57	39957.0	343.0	6.31	6.285	0.912	-0.04017
2/20/2007 11:06:03	39963.5	349.5	6.34	6.308	0.889	-0.05125
2/20/2007 11:06:09	39969.0	355.0	6.36	6.329	0.868	-0.06162
2/20/2007 11:06:16	39976.0	362.0	6.38	6.350	0.847	-0.07224
2/20/2007 11:06:25	39985.0	371.0	6.4	6.371	0.826	-0.08312
2/20/2007 11:06:32	39992.5	378.5	6.42	6.390	0.807	-0.09320
2/20/2007 11:06:39	39999.0	385.0	6.44	6.409	0.788	-0.10353
2/20/2007 11:06:46	40006.0	392.0	6.46	6.427	0.770	-0.11354
2/20/2007 11:06:52	40012.0	398.0	6.47	6.446	0.751	-0.12437
2/20/2007 11:06:58	40018.5	404.5	6.49	6.465	0.732	-0.13548
2/20/2007 11:07:09	40029.0	415.0	6.51	6.483	0.714	-0.14625
2/20/2007 11:07:19	40039.5	425.5	6.53	6.502	0.695	-0.15793
2/20/2007 11:07:24	40044.0	430.0	6.55	6.518	0.679	-0.16802
2/20/2007 11:07:33	40053.5	439.5	6.56	6.534	0.663	-0.17834
2/20/2007 11:07:43	40063.5	449.5	6.58	6.551	0.646	-0.18957
2/20/2007 11:07:48	40068.5	454.5	6.6	6.567	0.630	-0.20044
2/20/2007 11:07:56	40076.0	462.0	6.61	6.583	0.614	-0.21157
2/20/2007 11:08:07	40087.0	473.0	6.63	6.600	0.597	-0.22371
2/20/2007 11:08:17	40097.5	483.5	6.64	6.614	0.583	-0.23396
2/20/2007 11:08:22	40102.5	488.5	6.66	6.628	0.570	-0.24449
2/20/2007 11:08:33	40113.0	499.0	6.67	6.643	0.554	-0.25681

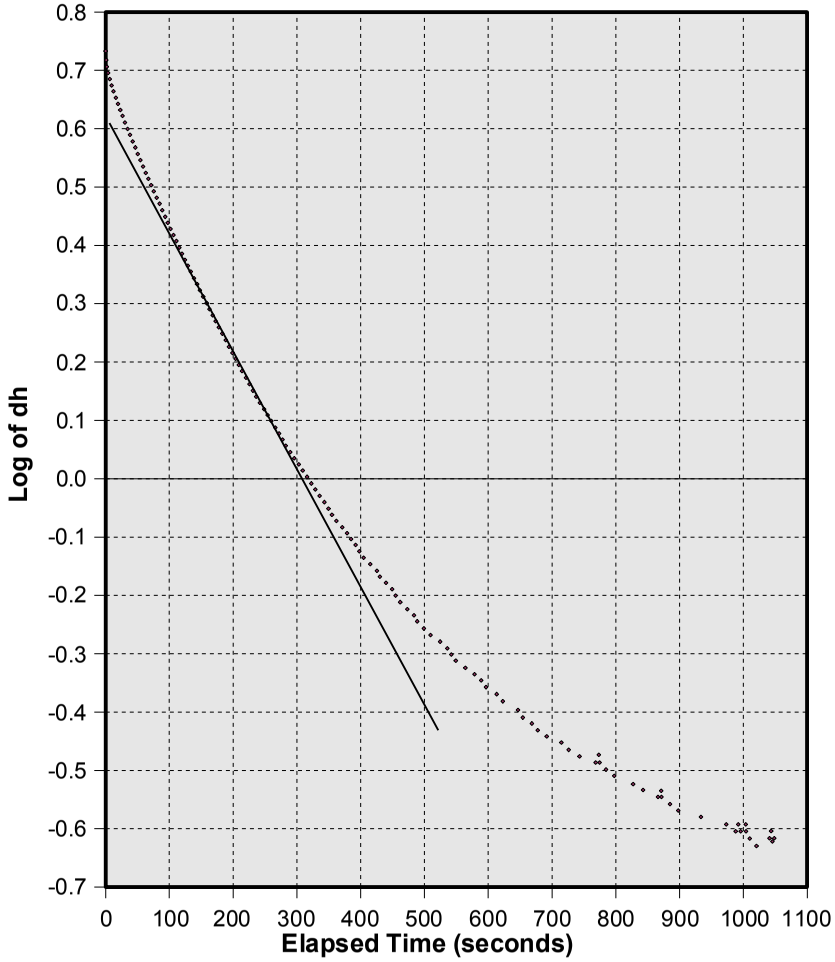
Slug Test P3-6D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 11:08:43	40123.5	509.5	6.69	6.657	0.540	-0.26789
2/20/2007 11:08:58	40138.5	524.5	6.7	6.671	0.526	-0.27923
2/20/2007 11:09:10	40150.0	536.0	6.71	6.685	0.512	-0.29089
2/20/2007 11:09:16	40156.0	542.0	6.73	6.697	0.500	-0.30116
2/20/2007 11:09:23	40163.0	549.0	6.74	6.709	0.488	-0.31168
2/20/2007 11:09:38	40178.0	564.0	6.75	6.723	0.474	-0.32424
2/20/2007 11:09:52	40192.5	578.5	6.76	6.735	0.462	-0.33530
2/20/2007 11:10:03	40203.0	589.0	6.78	6.746	0.451	-0.34570
2/20/2007 11:10:10	40210.5	596.5	6.79	6.758	0.439	-0.35736
2/20/2007 11:10:27	40227.0	613.0	6.8	6.770	0.427	-0.36929
2/20/2007 11:10:37	40237.0	623.0	6.81	6.782	0.415	-0.38160
2/20/2007 11:11:00	40260.5	646.5	6.83	6.796	0.401	-0.39634
2/20/2007 11:11:08	40268.0	654.0	6.84	6.808	0.390	-0.40947
2/20/2007 11:11:22	40282.5	668.5	6.85	6.816	0.381	-0.41952
2/20/2007 11:11:31	40291.5	677.5	6.86	6.826	0.371	-0.43102
2/20/2007 11:11:45	40305.5	691.5	6.87	6.835	0.362	-0.44159
2/20/2007 11:12:08	40328.5	714.5	6.87	6.844	0.353	-0.45237
2/20/2007 11:12:20	40340.0	726.0	6.88	6.854	0.343	-0.46476
2/20/2007 11:12:37	40357.0	743.0	6.89	6.863	0.334	-0.47618
2/20/2007 11:13:02	40382.5	768.5	6.9	6.871	0.326	-0.48650
2/20/2007 11:13:07	40387.5	773.5	6.89	6.861	0.336	-0.47335
2/20/2007 11:13:08	40388.5	774.5	6.9	6.871	0.326	-0.48645
2/20/2007 11:13:18	40398.5	784.5	6.91	6.880	0.317	-0.49852
2/20/2007 11:13:31	40411.5	797.5	6.92	6.888	0.309	-0.50950
2/20/2007 11:14:01	40441.0	827.0	6.93	6.897	0.300	-0.52351
2/20/2007 11:14:16	40456.5	842.5	6.94	6.904	0.293	-0.53364
2/20/2007 11:14:40	40480.0	866.0	6.94	6.912	0.285	-0.54546
2/20/2007 11:14:45	40485.0	871.0	6.94	6.905	0.292	-0.53487
2/20/2007 11:14:45	40485.5	871.5	6.94	6.912	0.285	-0.54541
2/20/2007 11:14:59	40499.0	885.0	6.95	6.920	0.277	-0.55765
2/20/2007 11:15:12	40512.0	898.0	6.96	6.927	0.270	-0.56865
2/20/2007 11:15:47	40547.5	933.5	6.97	6.934	0.263	-0.57970
2/20/2007 11:16:27	40587.0	973.0	6.97	6.942	0.255	-0.59270
2/20/2007 11:16:42	40602.0	988.0	6.98	6.949	0.249	-0.60461
2/20/2007 11:16:46	40606.0	992.0	6.97	6.941	0.256	-0.59251
2/20/2007 11:16:49	40609.5	995.5	6.98	6.948	0.249	-0.60453
2/20/2007 11:16:57	40617.5	1003.5	6.97	6.941	0.256	-0.59239
2/20/2007 11:16:58	40618.0	1004.0	6.98	6.948	0.249	-0.60444
2/20/2007 11:17:04	40624.0	1010.0	6.99	6.955	0.242	-0.61678
2/20/2007 11:17:14	40634.5	1020.5	6.99	6.962	0.235	-0.62943
2/20/2007 11:17:35	40655.0	1041.0	6.99	6.955	0.242	-0.61645
2/20/2007 11:17:37	40657.5	1043.5	6.98	6.948	0.249	-0.60403
2/20/2007 11:17:39	40659.5	1045.5	6.99	6.958	0.239	-0.62182
2/20/2007 11:17:42	40662.5	1048.5	6.99	6.955	0.242	-0.61636

Slug Test P3-6D

Slug Test by Bouwer and Rice

Displacement Method:	Pump	
Well depth:	37.04	ft
Stick up height:	2.94	ft
Depth to sand pack (BGS):	31.00	ft
Depth to screened interval (BGS):	32.04	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	5.81	ft
Initial Head Change:	5.41	ft
Total well length:	39.98	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	5.00	ft
Length of open section (L_e):	5.00	ft
L_e / r_w:	14.1176	
C (dimensionless):	1.483	
Drawdown at time = 0 (y_0):	2.66	ft
Drawdown at time = t (y_t):	1.05	ft
Elapsed Time between y_0 and y_t (t):	201	sec
Initial water column in well (L_w):	34.17	ft
$\ln(R_e/r_w)$ =	2.89	
K =	9.28E-06	ft/sec
	2.83E-04	**cm/sec**
	292.76	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-7

Initial offset in logger reading (feet):	-0.019	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	0.000011		
Initial depth to water table (feet):	6.96		
Depth of probe below water table (feet):	4.126		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:26:41	48401.0	0.0	8.19	8.207	4.081	0.61081
2/21/2007 13:26:41	48401.5	0.5	7.99	7.999	3.873	0.58809
2/21/2007 13:26:42	48402.5	1.5	7.82	7.834	3.708	0.56919
2/21/2007 13:26:43	48403.0	2.0	7.56	7.578	3.452	0.53812
2/21/2007 13:26:43	48403.5	2.5	7.47	7.481	3.355	0.52574
2/21/2007 13:26:44	48404.0	3.0	7.34	7.354	3.228	0.50899
2/21/2007 13:26:44	48404.5	3.5	7.21	7.227	3.101	0.49156
2/21/2007 13:26:45	48405.0	4.0	7.11	7.123	2.997	0.47674
2/21/2007 13:26:45	48405.5	4.5	7.01	7.022	2.896	0.46186
2/21/2007 13:26:46	48406.0	5.0	6.91	6.925	2.799	0.44706
2/21/2007 13:26:46	48406.5	5.5	6.82	6.833	2.707	0.43255
2/21/2007 13:26:47	48407.0	6.0	6.73	6.748	2.622	0.41869
2/21/2007 13:26:47	48407.5	6.5	6.65	6.668	2.542	0.40524
2/21/2007 13:26:48	48408.0	7.0	6.57	6.588	2.462	0.39135
2/21/2007 13:26:48	48408.5	7.5	6.5	6.515	2.389	0.37828
2/21/2007 13:26:49	48409.0	8.0	6.43	6.447	2.321	0.36574
2/21/2007 13:26:49	48409.5	8.5	6.37	6.381	2.255	0.35321
2/21/2007 13:26:50	48410.0	9.0	6.3	6.317	2.191	0.34071
2/21/2007 13:26:50	48410.5	9.5	6.24	6.256	2.130	0.32845
2/21/2007 13:26:51	48411.0	10.0	6.19	6.199	2.073	0.31667
2/21/2007 13:26:51	48411.5	10.5	6.13	6.140	2.014	0.30413
2/21/2007 13:26:52	48412.0	11.0	6.07	6.088	1.962	0.29277
2/21/2007 13:26:52	48412.5	11.5	6.03	6.039	1.913	0.28178
2/21/2007 13:26:53	48413.0	12.0	5.98	5.989	1.863	0.27028
2/21/2007 13:26:53	48413.5	12.5	5.93	5.942	1.816	0.25919
2/21/2007 13:26:54	48414.0	13.0	5.88	5.897	1.771	0.24829
2/21/2007 13:26:54	48414.5	13.5	5.84	5.855	1.729	0.23787
2/21/2007 13:26:55	48415.0	14.0	5.8	5.812	1.686	0.22693
2/21/2007 13:26:55	48415.5	14.5	5.76	5.772	1.646	0.21650
2/21/2007 13:26:56	48416.0	15.0	5.72	5.732	1.606	0.20582
2/21/2007 13:26:56	48416.5	15.5	5.68	5.694	1.568	0.19542
2/21/2007 13:26:57	48417.0	16.0	5.64	5.657	1.531	0.18505
2/21/2007 13:26:57	48417.5	16.5	5.61	5.621	1.495	0.17471
2/21/2007 13:26:58	48418.5	17.5	5.55	5.560	1.434	0.15662
2/21/2007 13:26:59	48419.0	18.0	5.51	5.525	1.399	0.14589
2/21/2007 13:27:00	48420.0	19.0	5.45	5.466	1.340	0.12718
2/21/2007 13:27:01	48421.0	20.0	5.4	5.409	1.283	0.10830
2/21/2007 13:27:02	48422.0	21.0	5.34	5.355	1.229	0.08962
2/21/2007 13:27:03	48423.0	22.0	5.29	5.307	1.181	0.07232
2/21/2007 13:27:04	48424.0	23.0	5.25	5.263	1.137	0.05583
2/21/2007 13:27:05	48425.0	24.0	5.2	5.218	1.092	0.03829
2/21/2007 13:27:06	48426.0	25.0	5.16	5.175	1.049	0.02084
2/21/2007 13:27:07	48427.0	26.0	5.12	5.137	1.011	0.00481
2/21/2007 13:27:08	48428.0	27.0	5.09	5.100	0.974	-0.01138

Slug Test P3-7

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:27:09	48429.0	28.0	5.05	5.064	0.938	-0.02774
2/21/2007 13:27:10	48430.0	29.0	5.02	5.029	0.903	-0.04426
2/21/2007 13:27:11	48431.0	30.0	4.98	4.998	0.872	-0.05943
2/21/2007 13:27:12	48432.0	31.0	4.95	4.967	0.841	-0.07516
2/21/2007 13:27:13	48433.0	32.0	4.93	4.939	0.813	-0.08986
2/21/2007 13:27:14	48434.0	33.0	4.9	4.915	0.789	-0.10288
2/21/2007 13:27:15	48435.0	34.0	4.88	4.892	0.766	-0.11574
2/21/2007 13:27:16	48436.0	35.0	4.85	4.866	0.740	-0.13074
2/21/2007 13:27:17	48437.0	36.0	4.83	4.844	0.718	-0.14385
2/21/2007 13:27:18	48438.0	37.0	4.81	4.823	0.697	-0.15675
2/21/2007 13:27:19	48439.0	38.0	4.79	4.802	0.676	-0.17004
2/21/2007 13:27:20	48440.0	39.0	4.77	4.783	0.657	-0.18243
2/21/2007 13:27:21	48441.0	40.0	4.75	4.764	0.638	-0.19518
2/21/2007 13:27:22	48442.0	41.0	4.73	4.745	0.619	-0.20832
2/21/2007 13:27:23	48443.0	42.0	4.72	4.729	0.603	-0.21970
2/21/2007 13:27:24	48444.0	43.0	4.7	4.712	0.586	-0.23213
2/21/2007 13:27:25	48445.0	44.0	4.68	4.695	0.569	-0.24492
2/21/2007 13:27:26	48446.0	45.0	4.67	4.679	0.553	-0.25732
2/21/2007 13:27:27	48447.0	46.0	4.65	4.664	0.539	-0.26846
2/21/2007 13:27:28	48448.5	47.5	4.63	4.645	0.520	-0.28406
2/21/2007 13:27:29	48449.5	48.5	4.62	4.628	0.503	-0.29851
2/21/2007 13:27:31	48451.0	50.0	4.6	4.609	0.484	-0.31525
2/21/2007 13:27:32	48452.5	51.5	4.58	4.590	0.465	-0.33266
2/21/2007 13:27:34	48454.0	53.0	4.56	4.576	0.451	-0.34596
2/21/2007 13:27:35	48455.0	54.0	4.55	4.564	0.439	-0.35768
2/21/2007 13:27:36	48456.5	55.5	4.54	4.548	0.423	-0.37383
2/21/2007 13:27:38	48458.0	57.0	4.52	4.531	0.406	-0.39167
2/21/2007 13:27:40	48460.0	59.0	4.5	4.517	0.392	-0.40694
2/21/2007 13:27:41	48461.0	60.0	4.49	4.507	0.382	-0.41818
2/21/2007 13:27:42	48462.0	61.0	4.49	4.498	0.373	-0.42855
2/21/2007 13:27:43	48463.5	62.5	4.47	4.486	0.361	-0.44278
2/21/2007 13:27:44	48464.5	63.5	4.46	4.476	0.351	-0.45500
2/21/2007 13:27:46	48466.0	65.0	4.45	4.467	0.342	-0.46631
2/21/2007 13:27:47	48467.5	66.5	4.44	4.455	0.330	-0.48186
2/21/2007 13:27:49	48469.0	68.0	4.43	4.446	0.321	-0.49390
2/21/2007 13:27:50	48470.5	69.5	4.42	4.436	0.311	-0.50768
2/21/2007 13:27:52	48472.0	71.0	4.41	4.424	0.299	-0.52481
2/21/2007 13:27:53	48473.5	72.5	4.4	4.417	0.292	-0.53513
2/21/2007 13:27:54	48474.5	73.5	4.4	4.410	0.285	-0.54570
2/21/2007 13:27:56	48476.0	75.0	4.39	4.403	0.278	-0.55654
2/21/2007 13:27:57	48477.5	76.5	4.38	4.396	0.271	-0.56765
2/21/2007 13:27:58	48478.5	77.5	4.38	4.389	0.264	-0.57905
2/21/2007 13:28:00	48480.0	79.0	4.37	4.382	0.257	-0.59077
2/21/2007 13:28:01	48481.5	80.5	4.36	4.372	0.247	-0.60806
2/21/2007 13:28:03	48483.5	82.5	4.35	4.365	0.240	-0.62061
2/21/2007 13:28:05	48485.5	84.5	4.35	4.358	0.233	-0.63353
2/21/2007 13:28:06	48486.0	85.0	4.34	4.351	0.226	-0.64681
2/21/2007 13:28:08	48488.0	87.0	4.33	4.344	0.218	-0.66055
2/21/2007 13:28:10	48490.0	89.0	4.32	4.337	0.211	-0.67473

Slug Test P3-7

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:28:12	48492.0	91.0	4.32	4.329	0.203	-0.69153
2/21/2007 13:28:14	48494.0	93.0	4.31	4.322	0.196	-0.70678
2/21/2007 13:28:16	48496.5	95.5	4.3	4.315	0.189	-0.72260
2/21/2007 13:28:18	48498.5	97.5	4.3	4.308	0.182	-0.73900
2/21/2007 13:28:20	48500.5	99.5	4.29	4.301	0.175	-0.75605
2/21/2007 13:28:21	48501.5	100.5	4.28	4.296	0.170	-0.76864
2/21/2007 13:28:24	48504.5	103.5	4.28	4.289	0.163	-0.78695
2/21/2007 13:28:27	48507.0	106.0	4.27	4.284	0.158	-0.80053
2/21/2007 13:28:28	48508.5	107.5	4.27	4.280	0.154	-0.81169
2/21/2007 13:28:31	48511.5	110.5	4.26	4.275	0.149	-0.82609
2/21/2007 13:28:33	48513.0	112.0	4.26	4.270	0.144	-0.84093
2/21/2007 13:28:34	48514.5	113.5	4.25	4.265	0.139	-0.85631
2/21/2007 13:28:38	48518.0	117.0	4.25	4.261	0.135	-0.86909
2/21/2007 13:28:39	48519.0	118.0	4.24	4.256	0.130	-0.88549
2/21/2007 13:28:42	48522.5	121.5	4.24	4.249	0.123	-0.90963
2/21/2007 13:28:44	48524.5	123.5	4.23	4.244	0.118	-0.92771
2/21/2007 13:28:45	48525.0	124.0	4.23	4.247	0.121	-0.91683
2/21/2007 13:28:46	48526.0	125.0	4.23	4.244	0.118	-0.92777
2/21/2007 13:28:46	48526.5	125.5	4.23	4.240	0.114	-0.94275
2/21/2007 13:28:47	48527.0	126.0	4.23	4.244	0.118	-0.92781
2/21/2007 13:28:48	48528.5	127.5	4.22	4.237	0.111	-0.95441
2/21/2007 13:28:49	48529.5	128.5	4.23	4.240	0.114	-0.94287
2/21/2007 13:28:50	48530.0	129.0	4.22	4.235	0.109	-0.96236
2/21/2007 13:28:50	48530.5	129.5	4.22	4.232	0.106	-0.97450
2/21/2007 13:28:51	48531.0	130.0	4.22	4.235	0.109	-0.96240
2/21/2007 13:28:52	48532.5	131.5	4.22	4.232	0.106	-0.97459
2/21/2007 13:28:54	48534.0	133.0	4.22	4.228	0.102	-0.99136
2/21/2007 13:28:56	48536.5	135.5	4.21	4.225	0.099	-1.00444
2/21/2007 13:28:57	48537.0	136.0	4.22	4.228	0.102	-0.99149
2/21/2007 13:28:57	48537.5	136.5	4.21	4.225	0.099	-1.00448
2/21/2007 13:29:00	48540.0	139.0	4.21	4.220	0.094	-1.02712
2/21/2007 13:29:01	48541.0	140.0	4.21	4.222	0.097	-1.01351
2/21/2007 13:29:03	48543.0	142.0	4.21	4.219	0.094	-1.02727
2/21/2007 13:29:03	48543.5	142.5	4.2	4.212	0.087	-1.06093
2/21/2007 13:29:04	48544.0	143.0	4.2	4.215	0.090	-1.04622
2/21/2007 13:29:05	48545.5	144.5	4.21	4.219	0.094	-1.02739
2/21/2007 13:29:06	48546.0	145.0	4.2	4.215	0.090	-1.04632
2/21/2007 13:29:07	48547.5	146.5	4.2	4.212	0.087	-1.06115
2/21/2007 13:29:09	48549.0	148.0	4.2	4.215	0.090	-1.04648
2/21/2007 13:29:09	48549.5	148.5	4.2	4.212	0.087	-1.06125
2/21/2007 13:29:11	48551.0	150.0	4.2	4.210	0.085	-1.07145
2/21/2007 13:29:12	48552.0	151.0	4.2	4.208	0.083	-1.08187
2/21/2007 13:29:13	48553.0	152.0	4.19	4.205	0.080	-1.09795
2/21/2007 13:29:14	48554.0	153.0	4.19	4.203	0.078	-1.10903
2/21/2007 13:29:14	48554.5	153.5	4.2	4.208	0.083	-1.08201
2/21/2007 13:29:15	48555.0	154.0	4.19	4.205	0.080	-1.09807
2/21/2007 13:29:16	48556.5	155.5	4.19	4.203	0.078	-1.10918
2/21/2007 13:29:18	48558.5	157.5	4.19	4.201	0.076	-1.12062
2/21/2007 13:29:20	48560.5	159.5	4.19	4.198	0.073	-1.13829

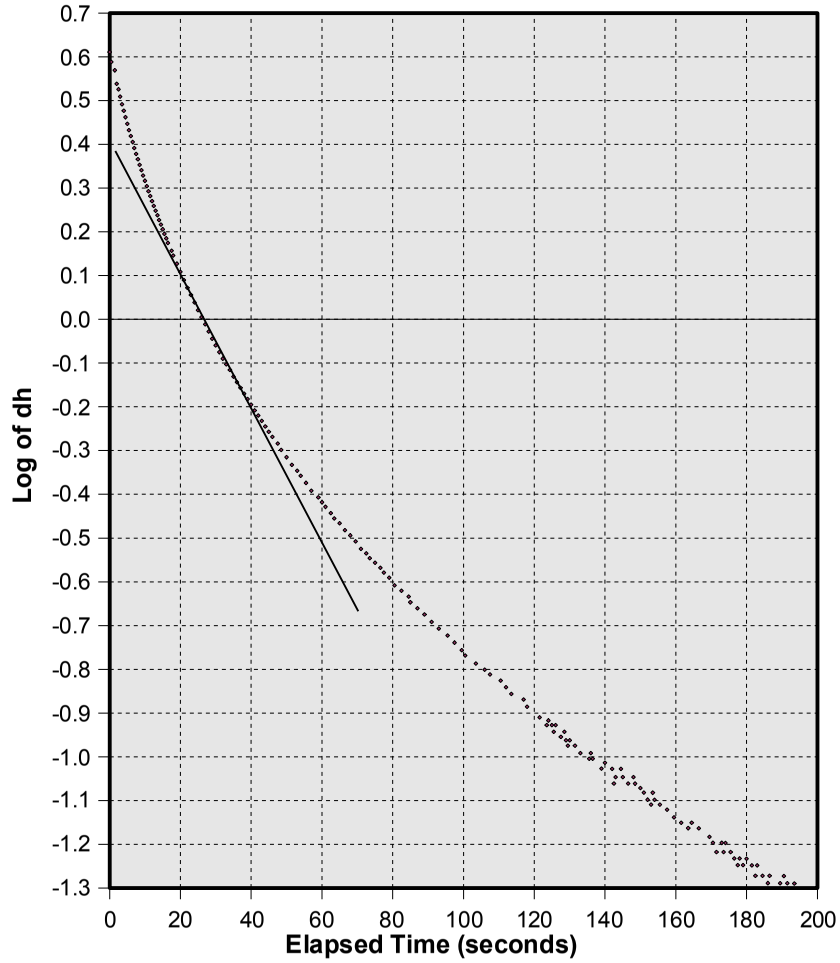
Slug Test P3-7

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:29:22	48562.5	161.5	4.18	4.196	0.071	-1.15054
2/21/2007 13:29:24	48564.5	163.5	4.18	4.194	0.069	-1.16313
2/21/2007 13:29:25	48565.5	164.5	4.18	4.196	0.071	-1.15073
2/21/2007 13:29:27	48567.5	166.5	4.18	4.194	0.069	-1.16333
2/21/2007 13:29:30	48570.5	169.5	4.18	4.191	0.066	-1.18295
2/21/2007 13:29:31	48571.5	170.5	4.18	4.189	0.064	-1.19646
2/21/2007 13:29:32	48572.5	171.5	4.17	4.186	0.061	-1.21752
2/21/2007 13:29:34	48574.0	173.0	4.18	4.189	0.064	-1.19664
2/21/2007 13:29:34	48574.5	173.5	4.17	4.186	0.061	-1.21767
2/21/2007 13:29:35	48575.0	174.0	4.18	4.189	0.064	-1.19672
2/21/2007 13:29:36	48576.5	175.5	4.17	4.186	0.061	-1.21782
2/21/2007 13:29:37	48577.5	176.5	4.17	4.184	0.059	-1.23249
2/21/2007 13:29:38	48578.5	177.5	4.17	4.182	0.057	-1.24766
2/21/2007 13:29:39	48579.0	178.0	4.17	4.184	0.059	-1.23261
2/21/2007 13:29:40	48580.0	179.0	4.17	4.182	0.057	-1.24779
2/21/2007 13:29:41	48581.0	180.0	4.17	4.184	0.059	-1.23276
2/21/2007 13:29:42	48582.5	181.5	4.17	4.182	0.056	-1.24799
2/21/2007 13:29:43	48583.5	182.5	4.17	4.179	0.053	-1.27177
2/21/2007 13:29:44	48584.0	183.0	4.17	4.182	0.056	-1.24811
2/21/2007 13:29:45	48585.5	184.5	4.17	4.179	0.053	-1.27195
2/21/2007 13:29:47	48587.0	186.0	4.17	4.177	0.051	-1.28864
2/21/2007 13:29:47	48587.5	186.5	4.17	4.179	0.053	-1.27212
2/21/2007 13:29:50	48590.5	189.5	4.17	4.177	0.051	-1.28895
2/21/2007 13:29:51	48591.5	190.5	4.17	4.179	0.053	-1.27247
2/21/2007 13:29:52	48592.5	191.5	4.17	4.177	0.051	-1.28913
2/21/2007 13:29:54	48594.5	193.5	4.17	4.177	0.051	-1.28931

Slug Test P3-7

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	16.83	ft
Stick up height:	3.06	ft
Depth to sand pack (BGS):	4.50	ft
Depth to screened interval (BGS):	6.83	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	6.96	ft
Initial Head Change:	4.08	ft
Total well length:	19.89	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.53	ft
Drawdown at time = t (y_t):	0.59	ft
Elapsed Time between y_0 and y_t (t):	26.5	sec
Initial water column in well (L_w):	12.93	ft
$\ln(R_e/r_w)$ =	2.09	
K =	2.60E-05	ft/sec
	7.92E-04	**cm/sec**
	819.20	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-8

Initial offset in logger reading (feet):	0.002	Date:	02/20/2007
Offset increment in logger reading (feet/sec):	-0.000074		
Initial depth to water table (feet):	4.32		
Depth of probe below water table (feet):	3.442		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:34:42	48882.0	0.0	7.42	7.424	3.982	0.60012
2/20/2007 13:34:42	48882.5	0.5	7.26	7.271	3.829	0.58311
2/20/2007 13:34:43	48883.0	1.0	6.99	7.001	3.559	0.55136
2/20/2007 13:34:43	48883.5	1.5	6.92	6.928	3.486	0.54236
2/20/2007 13:34:44	48884.0	2.0	6.8	6.810	3.368	0.52741
2/20/2007 13:34:44	48884.5	2.5	6.7	6.704	3.262	0.51353
2/20/2007 13:34:45	48885.0	3.0	6.61	6.618	3.176	0.50193
2/20/2007 13:34:45	48885.5	3.5	6.53	6.535	3.093	0.49044
2/20/2007 13:34:46	48886.0	4.0	6.45	6.455	3.013	0.47907
2/20/2007 13:34:46	48886.5	4.5	6.38	6.385	2.944	0.46886
2/20/2007 13:34:47	48887.0	5.0	6.31	6.319	2.878	0.45902
2/20/2007 13:34:47	48887.5	5.5	6.25	6.253	2.812	0.44895
2/20/2007 13:34:48	48888.0	6.0	6.19	6.199	2.758	0.44053
2/20/2007 13:34:48	48888.5	6.5	6.14	6.143	2.702	0.43163
2/20/2007 13:34:49	48889.0	7.0	6.08	6.091	2.650	0.42319
2/20/2007 13:34:49	48889.5	7.5	6.03	6.042	2.601	0.41509
2/20/2007 13:34:50	48890.0	8.0	5.99	5.994	2.553	0.40701
2/20/2007 13:34:50	48890.5	8.5	5.94	5.950	2.509	0.39947
2/20/2007 13:34:51	48891.0	9.0	5.9	5.907	2.466	0.39196
2/20/2007 13:34:51	48891.5	9.5	5.86	5.866	2.424	0.38451
2/20/2007 13:34:52	48892.0	10.0	5.82	5.826	2.384	0.37729
2/20/2007 13:34:52	48892.5	10.5	5.78	5.786	2.344	0.36995
2/20/2007 13:34:53	48893.0	11.0	5.74	5.753	2.311	0.36380
2/20/2007 13:34:53	48893.5	11.5	5.71	5.717	2.275	0.35698
2/20/2007 13:34:54	48894.0	12.0	5.68	5.684	2.242	0.35065
2/20/2007 13:34:54	48894.5	12.5	5.64	5.651	2.209	0.34421
2/20/2007 13:34:55	48895.0	13.0	5.61	5.618	2.176	0.33768
2/20/2007 13:34:55	48895.5	13.5	5.58	5.587	2.145	0.33146
2/20/2007 13:34:56	48896.0	14.0	5.55	5.556	2.114	0.32515
2/20/2007 13:34:56	48896.5	14.5	5.51	5.523	2.081	0.31832
2/20/2007 13:34:57	48897.0	15.0	5.49	5.495	2.053	0.31245
2/20/2007 13:34:57	48897.5	15.5	5.46	5.466	2.024	0.30628
2/20/2007 13:34:58	48898.0	16.0	5.43	5.438	1.996	0.30024
2/20/2007 13:34:58	48898.5	16.5	5.4	5.412	1.970	0.29455
2/20/2007 13:34:59	48899.0	17.0	5.37	5.383	1.941	0.28812
2/20/2007 13:34:59	48899.5	17.5	5.35	5.359	1.917	0.28273
2/20/2007 13:35:00	48900.0	18.0	5.32	5.333	1.891	0.27681
2/20/2007 13:35:00	48900.5	18.5	5.3	5.310	1.869	0.27150
2/20/2007 13:35:01	48901.0	19.0	5.28	5.286	1.845	0.26590
2/20/2007 13:35:01	48901.5	19.5	5.25	5.262	1.821	0.26022
2/20/2007 13:35:02	48902.0	20.0	5.23	5.238	1.797	0.25446
2/20/2007 13:35:02	48902.5	20.5	5.21	5.214	1.773	0.24863
2/20/2007 13:35:03	48903.0	21.0	5.18	5.193	1.752	0.24346
2/20/2007 13:35:03	48903.5	21.5	5.16	5.172	1.731	0.23824

Slug Test P3-8

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:35:04	48904.0	22.0	5.14	5.150	1.709	0.23269
2/20/2007 13:35:04	48904.5	22.5	5.12	5.129	1.688	0.22733
2/20/2007 13:35:05	48905.5	23.5	5.08	5.089	1.647	0.21667
2/20/2007 13:35:06	48906.0	24.0	5.06	5.070	1.628	0.21164
2/20/2007 13:35:06	48906.5	24.5	5.04	5.051	1.609	0.20655
2/20/2007 13:35:07	48907.0	25.0	5.02	5.032	1.590	0.20140
2/20/2007 13:35:07	48907.5	25.5	5	5.013	1.571	0.19619
2/20/2007 13:35:08	48908.5	26.5	4.96	4.974	1.532	0.18529
2/20/2007 13:35:09	48909.5	27.5	4.93	4.941	1.499	0.17586
2/20/2007 13:35:10	48910.5	28.5	4.9	4.907	1.465	0.16592
2/20/2007 13:35:11	48911.5	29.5	4.86	4.871	1.429	0.15514
2/20/2007 13:35:12	48912.5	30.5	4.83	4.840	1.398	0.14564
2/20/2007 13:35:13	48913.5	31.5	4.8	4.814	1.372	0.13751
2/20/2007 13:35:14	48914.0	32.0	4.79	4.797	1.356	0.13211
2/20/2007 13:35:15	48915.0	33.0	4.76	4.766	1.325	0.12208
2/20/2007 13:35:16	48916.0	34.0	4.73	4.739	1.298	0.11317
2/20/2007 13:35:17	48917.0	35.0	4.7	4.713	1.272	0.10440
2/20/2007 13:35:17	48917.5	35.5	4.69	4.698	1.257	0.09926
2/20/2007 13:35:18	48918.5	36.5	4.66	4.673	1.231	0.09021
2/20/2007 13:35:19	48919.5	37.5	4.64	4.646	1.204	0.08060
2/20/2007 13:35:20	48920.5	38.5	4.62	4.629	1.187	0.07445
2/20/2007 13:35:21	48921.0	39.0	4.6	4.610	1.168	0.06746
2/20/2007 13:35:22	48922.0	40.0	4.58	4.588	1.146	0.05923
2/20/2007 13:35:23	48923.0	41.0	4.55	4.564	1.122	0.05007
2/20/2007 13:35:24	48924.0	42.0	4.53	4.542	1.100	0.04150
2/20/2007 13:35:24	48924.5	42.5	4.52	4.528	1.086	0.03595
2/20/2007 13:35:25	48925.5	43.5	4.5	4.511	1.069	0.02913
2/20/2007 13:35:26	48926.5	44.5	4.48	4.489	1.047	0.02013
2/20/2007 13:35:27	48927.5	45.5	4.45	4.465	1.024	0.01010
2/20/2007 13:35:28	48928.5	46.5	4.44	4.446	1.005	0.00199
2/20/2007 13:35:29	48929.5	47.5	4.42	4.426	0.985	-0.00671
2/20/2007 13:35:30	48930.5	48.5	4.4	4.409	0.968	-0.01424
2/20/2007 13:35:31	48931.5	49.5	4.38	4.387	0.946	-0.02419
2/20/2007 13:35:32	48932.5	50.5	4.36	4.371	0.929	-0.03204
2/20/2007 13:35:33	48933.5	51.5	4.34	4.354	0.912	-0.04002
2/20/2007 13:35:34	48934.5	52.5	4.33	4.337	0.895	-0.04816
2/20/2007 13:35:35	48935.5	53.5	4.31	4.320	0.878	-0.05645
2/20/2007 13:35:36	48936.5	54.5	4.29	4.303	0.861	-0.06491
2/20/2007 13:35:37	48937.0	55.0	4.28	4.293	0.851	-0.06996
2/20/2007 13:35:38	48938.0	56.0	4.27	4.279	0.837	-0.07712
2/20/2007 13:35:39	48939.0	57.0	4.25	4.262	0.820	-0.08599
2/20/2007 13:35:40	48940.0	58.0	4.24	4.247	0.805	-0.09397
2/20/2007 13:35:41	48941.0	59.0	4.22	4.233	0.792	-0.10154
2/20/2007 13:35:42	48942.0	60.0	4.21	4.218	0.777	-0.10981
2/20/2007 13:35:43	48943.0	61.0	4.19	4.203	0.762	-0.11824
2/20/2007 13:35:44	48944.0	62.0	4.18	4.191	0.750	-0.12509
2/20/2007 13:35:45	48945.0	63.0	4.16	4.176	0.735	-0.13383
2/20/2007 13:35:46	48946.0	64.0	4.15	4.165	0.723	-0.14093
2/20/2007 13:35:47	48947.0	65.0	4.14	4.153	0.711	-0.14816

Slug Test P3-8

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:35:48	48948.0	66.0	4.13	4.143	0.701	-0.15427
2/20/2007 13:35:49	48949.0	67.0	4.12	4.131	0.689	-0.16172
2/20/2007 13:35:50	48950.0	68.0	4.11	4.118	0.676	-0.16994
2/20/2007 13:35:51	48951.0	69.0	4.09	4.106	0.664	-0.17767
2/20/2007 13:35:52	48952.0	70.0	4.08	4.096	0.654	-0.18421
2/20/2007 13:35:53	48953.5	71.5	4.07	4.084	0.642	-0.19217
2/20/2007 13:35:54	48954.5	72.5	4.06	4.072	0.631	-0.20031
2/20/2007 13:35:55	48955.5	73.5	4.05	4.059	0.618	-0.20931
2/20/2007 13:35:56	48956.5	74.5	4.04	4.050	0.609	-0.21563
2/20/2007 13:35:57	48957.5	75.5	4.03	4.042	0.601	-0.22132
2/20/2007 13:35:58	48958.0	76.0	4.02	4.035	0.594	-0.22639
2/20/2007 13:35:59	48959.0	77.0	4.01	4.025	0.584	-0.23371
2/20/2007 13:36:00	48960.0	78.0	4.01	4.019	0.577	-0.23889
2/20/2007 13:36:01	48961.0	79.0	4	4.011	0.569	-0.24490
2/20/2007 13:36:02	48962.0	80.0	3.99	4.001	0.559	-0.25254
2/20/2007 13:36:03	48963.0	81.0	3.98	3.992	0.550	-0.25953
2/20/2007 13:36:04	48964.0	82.0	3.97	3.984	0.542	-0.26584
2/20/2007 13:36:05	48965.0	83.0	3.96	3.977	0.535	-0.27142
2/20/2007 13:36:06	48966.0	84.0	3.95	3.967	0.525	-0.27955
2/20/2007 13:36:07	48967.0	85.0	3.95	3.959	0.517	-0.28615
2/20/2007 13:36:08	48968.0	86.0	3.94	3.952	0.510	-0.29201
2/20/2007 13:36:09	48969.5	87.5	3.93	3.942	0.501	-0.30050
2/20/2007 13:36:10	48970.5	88.5	3.92	3.932	0.491	-0.30920
2/20/2007 13:36:11	48971.5	89.5	3.91	3.925	0.484	-0.31537
2/20/2007 13:36:12	48972.5	90.5	3.9	3.917	0.476	-0.32255
2/20/2007 13:36:13	48973.5	91.5	3.9	3.911	0.469	-0.32892
2/20/2007 13:36:14	48974.5	92.5	3.89	3.903	0.461	-0.33632
2/20/2007 13:36:16	48976.0	94.0	3.88	3.896	0.454	-0.34286
2/20/2007 13:36:17	48977.0	95.0	3.87	3.889	0.447	-0.34954
2/20/2007 13:36:18	48978.0	96.0	3.87	3.883	0.441	-0.35533
2/20/2007 13:36:19	48979.5	97.5	3.86	3.873	0.431	-0.36518
2/20/2007 13:36:21	48981.5	99.5	3.85	3.863	0.421	-0.37521
2/20/2007 13:36:22	48982.5	100.5	3.84	3.858	0.417	-0.38032
2/20/2007 13:36:23	48983.5	101.5	3.84	3.851	0.410	-0.38760
2/20/2007 13:36:24	48984.5	102.5	3.83	3.846	0.405	-0.39285
2/20/2007 13:36:25	48985.5	103.5	3.83	3.841	0.400	-0.39817
2/20/2007 13:36:26	48986.5	104.5	3.82	3.837	0.395	-0.40356
2/20/2007 13:36:27	48987.5	105.5	3.82	3.832	0.390	-0.40901
2/20/2007 13:36:28	48988.5	106.5	3.81	3.827	0.385	-0.41453
2/20/2007 13:36:29	48989.5	107.5	3.81	3.822	0.380	-0.42012
2/20/2007 13:36:30	48990.5	108.5	3.8	3.815	0.373	-0.42811
2/20/2007 13:36:32	48992.0	110.0	3.79	3.810	0.368	-0.43384
2/20/2007 13:36:33	48993.5	111.5	3.79	3.805	0.363	-0.43965
2/20/2007 13:36:34	48994.5	112.5	3.78	3.800	0.358	-0.44557
2/20/2007 13:36:35	48995.0	113.0	3.78	3.795	0.353	-0.45163
2/20/2007 13:36:37	48997.5	115.5	3.77	3.790	0.349	-0.45759
2/20/2007 13:36:39	48999.0	117.0	3.76	3.780	0.339	-0.47008
2/20/2007 13:36:41	49001.0	119.0	3.76	3.776	0.334	-0.47635
2/20/2007 13:36:42	49002.0	120.0	3.75	3.771	0.329	-0.48280

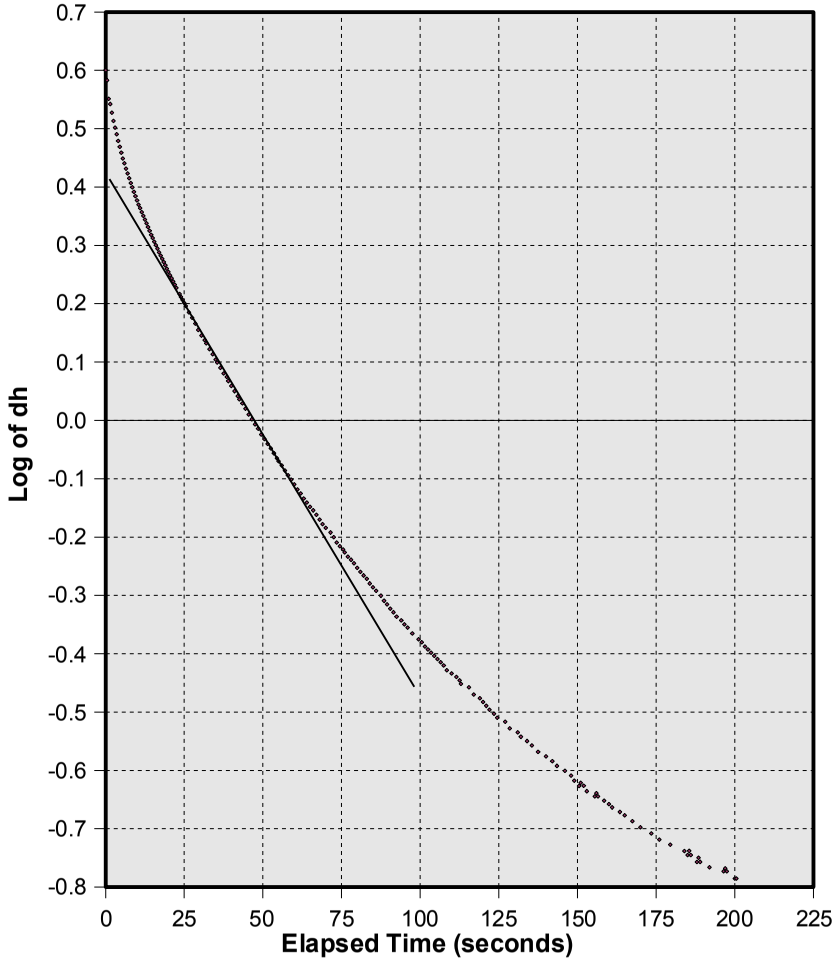
Slug Test P3-8

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/20/2007 13:36:43	49003.0	121.0	3.75	3.766	0.324	-0.48936
2/20/2007 13:36:44	49004.0	122.0	3.74	3.761	0.319	-0.49601
2/20/2007 13:36:45	49005.5	123.5	3.74	3.756	0.314	-0.50271
2/20/2007 13:36:46	49006.5	124.5	3.73	3.751	0.309	-0.50958
2/20/2007 13:36:49	49009.0	127.0	3.73	3.746	0.305	-0.51639
2/20/2007 13:36:50	49010.5	128.5	3.72	3.738	0.297	-0.52779
2/20/2007 13:36:53	49013.0	131.0	3.72	3.733	0.292	-0.53490
2/20/2007 13:36:54	49014.0	132.0	3.71	3.729	0.287	-0.54230
2/20/2007 13:36:56	49016.0	134.0	3.71	3.724	0.282	-0.54970
2/20/2007 13:36:57	49017.5	135.5	3.7	3.719	0.277	-0.55730
2/20/2007 13:36:59	49019.5	137.5	3.69	3.712	0.270	-0.56817
2/20/2007 13:37:02	49022.0	140.0	3.69	3.707	0.265	-0.57598
2/20/2007 13:37:04	49024.0	142.0	3.68	3.702	0.261	-0.58399
2/20/2007 13:37:05	49025.5	143.5	3.68	3.697	0.256	-0.59222
2/20/2007 13:37:08	49028.0	146.0	3.67	3.693	0.251	-0.60048
2/20/2007 13:37:10	49030.0	148.0	3.67	3.688	0.246	-0.60896
2/20/2007 13:37:11	49031.0	149.0	3.66	3.683	0.241	-0.61774
2/20/2007 13:37:12	49032.5	150.5	3.66	3.678	0.236	-0.62664
2/20/2007 13:37:13	49033.0	151.0	3.66	3.681	0.239	-0.62109
2/20/2007 13:37:14	49034.0	152.0	3.66	3.678	0.236	-0.62644
2/20/2007 13:37:15	49035.0	153.0	3.65	3.673	0.231	-0.63558
2/20/2007 13:37:17	49037.5	155.5	3.65	3.668	0.227	-0.64472
2/20/2007 13:37:18	49038.0	156.0	3.65	3.671	0.230	-0.63894
2/20/2007 13:37:18	49038.5	156.5	3.65	3.668	0.227	-0.64458
2/20/2007 13:37:20	49040.5	158.5	3.65	3.664	0.223	-0.65202
2/20/2007 13:37:22	49042.0	160.0	3.64	3.662	0.220	-0.65769
2/20/2007 13:37:23	49043.0	161.0	3.64	3.659	0.217	-0.66351
2/20/2007 13:37:25	49045.5	163.5	3.64	3.655	0.213	-0.67121
2/20/2007 13:37:27	49047.0	165.0	3.63	3.652	0.210	-0.67714
2/20/2007 13:37:29	49049.5	167.5	3.63	3.647	0.205	-0.68720
2/20/2007 13:37:32	49052.0	170.0	3.62	3.642	0.201	-0.69750
2/20/2007 13:37:35	49055.5	173.5	3.62	3.638	0.196	-0.70789
2/20/2007 13:37:38	49058.0	176.0	3.61	3.633	0.191	-0.71869
2/20/2007 13:37:41	49061.5	179.5	3.61	3.629	0.187	-0.72728
2/20/2007 13:37:46	49066.0	184.0	3.6	3.624	0.183	-0.73824
2/20/2007 13:37:47	49067.0	185.0	3.6	3.621	0.180	-0.74525
2/20/2007 13:37:47	49067.5	185.5	3.6	3.624	0.183	-0.73798
2/20/2007 13:37:48	49068.0	186.0	3.6	3.622	0.180	-0.74508
2/20/2007 13:37:50	49070.0	188.0	3.6	3.617	0.175	-0.75695
2/20/2007 13:37:50	49070.5	188.5	3.6	3.620	0.178	-0.74948
2/20/2007 13:37:51	49071.0	189.0	3.6	3.617	0.175	-0.75677
2/20/2007 13:37:54	49074.0	192.0	3.59	3.613	0.171	-0.76625
2/20/2007 13:37:58	49078.5	196.5	3.59	3.610	0.169	-0.77307
2/20/2007 13:37:59	49079.0	197.0	3.59	3.612	0.171	-0.76786
2/20/2007 13:37:59	49079.5	197.5	3.59	3.610	0.169	-0.77288
2/20/2007 13:38:02	49082.0	200.0	3.58	3.606	0.164	-0.78546
2/20/2007 13:38:02	49082.5	200.5	3.58	3.606	0.164	-0.78536

Slug Test P3-8

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	15.54	ft
Stick up height:	3.18	ft
Depth to sand pack (BGS):	4.25	ft
Depth to screened interval (BGS):	5.54	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	4.32	ft
Initial Head Change:	3.98	ft
Total well length:	18.72	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.80	ft
Drawdown at time = t (y_t):	0.66	ft
Elapsed Time between y_0 and y_t (t):	49	sec
Initial water column in well (L_w):	14.40	ft
$\ln(R_e/r_w)$ =	2.15	
K =	1.51E-05	ft/sec
	4.61E-04	**cm/sec**
	477.20	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-9

Initial offset in logger reading (feet):	-0.065	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	0.000049		
Initial depth to water table (feet):	3.73		
Depth of probe below water table (feet):	4.059		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:39:51	56391.0	0.0	7.74	7.796	3.737	0.57250
2/21/2007 15:39:51	56391.5	0.5	7.61	7.664	3.605	0.55688
2/21/2007 15:39:52	56392.0	1.0	7.51	7.567	3.508	0.54503
2/21/2007 15:39:53	56393.0	2.0	7.43	7.484	3.426	0.53475
2/21/2007 15:39:54	56394.0	3.0	7.33	7.383	3.325	0.52175
2/21/2007 15:39:55	56395.0	4.0	7.24	7.296	3.238	0.51022
2/21/2007 15:39:56	56396.0	5.0	7.17	7.221	3.163	0.50004
2/21/2007 15:39:57	56397.5	6.5	7.06	7.117	3.058	0.48551
2/21/2007 15:39:59	56399.0	8.0	6.97	7.025	2.966	0.47223
2/21/2007 15:40:00	56400.5	9.5	6.89	6.943	2.884	0.46005
2/21/2007 15:40:02	56402.0	11.0	6.81	6.867	2.808	0.44844
2/21/2007 15:40:03	56403.5	12.5	6.74	6.798	2.739	0.43762
2/21/2007 15:40:05	56405.0	14.0	6.68	6.732	2.673	0.42702
2/21/2007 15:40:07	56407.0	16.0	6.6	6.653	2.594	0.41397
2/21/2007 15:40:09	56409.0	18.0	6.53	6.581	2.522	0.40173
2/21/2007 15:40:11	56411.0	20.0	6.46	6.516	2.457	0.39037
2/21/2007 15:40:13	56413.0	22.0	6.4	6.453	2.395	0.37925
2/21/2007 15:40:15	56415.0	24.0	6.34	6.392	2.334	0.36803
2/21/2007 15:40:17	56417.0	26.0	6.28	6.337	2.279	0.35765
2/21/2007 15:40:19	56419.0	28.0	6.23	6.283	2.224	0.34722
2/21/2007 15:40:21	56421.0	30.0	6.18	6.229	2.170	0.33652
2/21/2007 15:40:23	56423.5	32.5	6.12	6.171	2.112	0.32474
2/21/2007 15:40:25	56425.5	34.5	6.07	6.122	2.063	0.31452
2/21/2007 15:40:28	56428.0	37.0	6.01	6.066	2.007	0.30254
2/21/2007 15:40:30	56430.5	39.5	5.96	6.014	1.955	0.29111
2/21/2007 15:40:33	56433.0	42.0	5.91	5.966	1.908	0.28052
2/21/2007 15:40:35	56435.5	44.5	5.87	5.917	1.859	0.26919
2/21/2007 15:40:38	56438.0	47.0	5.82	5.873	1.814	0.25875
2/21/2007 15:40:40	56440.5	49.5	5.78	5.831	1.772	0.24855
2/21/2007 15:40:43	56443.5	52.5	5.73	5.781	1.722	0.23609
2/21/2007 15:40:46	56446.5	55.5	5.69	5.739	1.680	0.22533
2/21/2007 15:40:49	56449.5	58.5	5.65	5.697	1.638	0.21429
2/21/2007 15:40:52	56452.5	61.5	5.6	5.652	1.593	0.20215
2/21/2007 15:40:55	56455.5	64.5	5.56	5.614	1.556	0.19190
2/21/2007 15:40:58	56458.5	67.5	5.52	5.575	1.516	0.18083
2/21/2007 15:41:01	56461.5	70.5	5.49	5.540	1.481	0.17065
2/21/2007 15:41:04	56464.5	73.5	5.46	5.506	1.447	0.16052
2/21/2007 15:41:07	56467.5	76.5	5.42	5.473	1.414	0.15046
2/21/2007 15:41:11	56471.0	80.0	5.39	5.436	1.377	0.13889
2/21/2007 15:41:14	56474.0	83.0	5.35	5.401	1.343	0.12798
2/21/2007 15:41:18	56478.0	87.0	5.32	5.369	1.311	0.11744
2/21/2007 15:41:21	56481.5	90.5	5.29	5.336	1.277	0.10631
2/21/2007 15:41:25	56485.0	94.0	5.25	5.304	1.245	0.09523
2/21/2007 15:41:28	56488.5	97.5	5.23	5.275	1.216	0.08493

Slug Test P3-9

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:41:32	56492.5	101.5	5.19	5.243	1.184	0.07328
2/21/2007 15:41:36	56496.0	105.0	5.17	5.215	1.157	0.06319
2/21/2007 15:41:39	56499.5	108.5	5.14	5.188	1.129	0.05287
2/21/2007 15:41:44	56504.0	113.0	5.11	5.158	1.099	0.04109
2/21/2007 15:41:48	56508.0	117.0	5.08	5.131	1.072	0.03021
2/21/2007 15:41:52	56512.0	121.0	5.06	5.105	1.046	0.01946
2/21/2007 15:41:56	56516.0	125.0	5.03	5.079	1.021	0.00887
2/21/2007 15:42:00	56520.5	129.5	5.01	5.055	0.996	-0.00156
2/21/2007 15:42:04	56524.5	133.5	4.98	5.028	0.969	-0.01358
2/21/2007 15:42:09	56529.0	138.0	4.96	5.004	0.945	-0.02457
2/21/2007 15:42:13	56533.5	142.5	4.93	4.982	0.923	-0.03491
2/21/2007 15:42:18	56538.0	147.0	4.91	4.959	0.901	-0.04549
2/21/2007 15:42:22	56542.5	151.5	4.89	4.937	0.878	-0.05634
2/21/2007 15:42:27	56547.5	156.5	4.87	4.916	0.857	-0.06698
2/21/2007 15:42:32	56552.0	161.0	4.85	4.894	0.835	-0.07839
2/21/2007 15:42:36	56556.0	165.0	4.83	4.874	0.816	-0.08849
2/21/2007 15:42:40	56560.5	169.5	4.81	4.855	0.796	-0.09885
2/21/2007 15:42:45	56565.5	174.5	4.79	4.835	0.776	-0.11003
2/21/2007 15:42:51	56571.0	180.0	4.77	4.816	0.757	-0.12095
2/21/2007 15:42:56	56576.0	185.0	4.75	4.798	0.740	-0.13096
2/21/2007 15:43:00	56580.5	189.5	4.74	4.781	0.722	-0.14119
2/21/2007 15:43:05	56585.5	194.5	4.72	4.764	0.705	-0.15169
2/21/2007 15:43:10	56590.5	199.5	4.7	4.747	0.688	-0.16244
2/21/2007 15:43:15	56595.5	204.5	4.69	4.729	0.671	-0.17347
2/21/2007 15:43:21	56601.5	210.5	4.67	4.713	0.654	-0.18415
2/21/2007 15:43:26	56606.0	215.0	4.65	4.696	0.637	-0.19573
2/21/2007 15:43:32	56612.0	221.0	4.64	4.681	0.622	-0.20628
2/21/2007 15:43:37	56617.0	226.0	4.62	4.666	0.608	-0.21635
2/21/2007 15:43:42	56622.5	231.5	4.61	4.651	0.592	-0.22740
2/21/2007 15:43:48	56628.5	237.5	4.59	4.637	0.578	-0.23801
2/21/2007 15:43:53	56633.5	242.5	4.58	4.620	0.561	-0.25117
2/21/2007 15:44:00	56640.5	249.5	4.56	4.605	0.546	-0.26242
2/21/2007 15:44:07	56647.0	256.0	4.55	4.590	0.531	-0.27477
2/21/2007 15:44:12	56652.0	261.0	4.54	4.578	0.519	-0.28490
2/21/2007 15:44:18	56658.0	267.0	4.52	4.561	0.503	-0.29876
2/21/2007 15:44:25	56665.0	274.0	4.51	4.549	0.490	-0.30956
2/21/2007 15:44:30	56670.5	279.5	4.5	4.537	0.478	-0.32057
2/21/2007 15:44:37	56677.0	286.0	4.48	4.524	0.466	-0.33191
2/21/2007 15:44:43	56683.0	292.0	4.47	4.512	0.453	-0.34353
2/21/2007 15:44:49	56689.0	298.0	4.46	4.501	0.442	-0.35449
2/21/2007 15:44:53	56693.0	302.0	4.45	4.491	0.432	-0.36462
2/21/2007 15:45:00	56700.0	309.0	4.44	4.478	0.420	-0.37722
2/21/2007 15:45:06	56706.0	315.0	4.43	4.467	0.408	-0.38907
2/21/2007 15:45:11	56711.5	320.5	4.42	4.457	0.398	-0.40014
2/21/2007 15:45:16	56716.0	325.0	4.41	4.448	0.389	-0.41032
2/21/2007 15:45:21	56721.5	330.5	4.4	4.437	0.378	-0.42195
2/21/2007 15:45:29	56729.0	338.0	4.39	4.428	0.369	-0.43283
2/21/2007 15:45:35	56735.0	344.0	4.38	4.419	0.360	-0.44391
2/21/2007 15:45:39	56739.5	348.5	4.37	4.409	0.351	-0.45519

Slug Test P3-9

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:45:47	56747.5	356.5	4.36	4.399	0.340	-0.46826
2/21/2007 15:45:54	56754.5	363.5	4.35	4.390	0.331	-0.48036
2/21/2007 15:46:01	56761.0	370.0	4.34	4.380	0.322	-0.49277
2/21/2007 15:46:07	56767.5	376.5	4.34	4.371	0.312	-0.50554
2/21/2007 15:46:15	56775.5	384.5	4.33	4.364	0.305	-0.51595
2/21/2007 15:46:21	56781.5	390.5	4.32	4.356	0.298	-0.52647
2/21/2007 15:46:28	56788.5	397.5	4.31	4.349	0.290	-0.53733
2/21/2007 15:46:33	56793.0	402.0	4.31	4.342	0.283	-0.54828
2/21/2007 15:46:38	56798.0	407.0	4.3	4.334	0.276	-0.55954
2/21/2007 15:46:45	56805.0	414.0	4.29	4.328	0.269	-0.56966
2/21/2007 15:46:52	56812.0	421.0	4.29	4.319	0.260	-0.58499
2/21/2007 15:46:57	56817.0	426.0	4.28	4.312	0.253	-0.59727
2/21/2007 15:47:05	56825.5	434.5	4.27	4.304	0.245	-0.61021
2/21/2007 15:47:12	56832.5	441.5	4.26	4.297	0.238	-0.62341
2/21/2007 15:47:17	56837.5	446.5	4.26	4.290	0.231	-0.63684
2/21/2007 15:47:25	56845.5	454.5	4.25	4.283	0.224	-0.64904
2/21/2007 15:47:30	56850.0	459.0	4.25	4.278	0.219	-0.65927
2/21/2007 15:47:37	56857.0	466.0	4.24	4.271	0.212	-0.67408
2/21/2007 15:47:44	56864.0	473.0	4.23	4.264	0.205	-0.68729
2/21/2007 15:47:52	56872.0	481.0	4.23	4.259	0.200	-0.69884
2/21/2007 15:48:02	56882.5	491.5	4.22	4.252	0.194	-0.71323
2/21/2007 15:48:06	56886.0	495.0	4.22	4.247	0.188	-0.72499
2/21/2007 15:48:12	56892.0	501.0	4.21	4.243	0.184	-0.73501
2/21/2007 15:48:17	56897.0	506.0	4.21	4.238	0.179	-0.74757
2/21/2007 15:48:23	56903.0	512.0	4.2	4.233	0.175	-0.75813
2/21/2007 15:48:26	56906.5	515.5	4.2	4.228	0.169	-0.77120
2/21/2007 15:48:27	56907.0	516.0	4.2	4.233	0.174	-0.75863
2/21/2007 15:48:29	56909.0	518.0	4.2	4.229	0.170	-0.76896
2/21/2007 15:48:35	56915.0	524.0	4.2	4.224	0.165	-0.78268
2/21/2007 15:48:39	56919.0	528.0	4.19	4.219	0.161	-0.79388
2/21/2007 15:48:49	56929.0	538.0	4.19	4.214	0.155	-0.80898
2/21/2007 15:48:55	56935.5	544.5	4.18	4.208	0.149	-0.82704
2/21/2007 15:49:01	56941.5	550.5	4.18	4.202	0.144	-0.84276
2/21/2007 15:49:05	56945.0	554.0	4.18	4.207	0.148	-0.82841
2/21/2007 15:49:06	56946.5	555.5	4.18	4.202	0.143	-0.84351
2/21/2007 15:49:09	56949.5	558.5	4.17	4.198	0.139	-0.85626
2/21/2007 15:49:10	56950.5	559.5	4.18	4.203	0.144	-0.84108
2/21/2007 15:49:11	56951.0	560.0	4.17	4.198	0.139	-0.85649
2/21/2007 15:49:22	56962.5	571.5	4.17	4.193	0.135	-0.87098
2/21/2007 15:49:27	56967.5	576.5	4.16	4.188	0.129	-0.88825
2/21/2007 15:49:40	56980.5	589.5	4.16	4.183	0.125	-0.90413
2/21/2007 15:49:41	56981.0	590.0	4.16	4.186	0.128	-0.89389
2/21/2007 15:49:42	56982.0	591.0	4.16	4.183	0.125	-0.90438
2/21/2007 15:49:43	56983.0	592.0	4.16	4.186	0.128	-0.89422
2/21/2007 15:49:55	56995.5	604.5	4.16	4.182	0.123	-0.91023
2/21/2007 15:50:06	57006.5	615.5	4.15	4.176	0.117	-0.93026
2/21/2007 15:50:07	57007.0	616.0	4.16	4.179	0.120	-0.91940
2/21/2007 15:50:10	57010.5	619.5	4.15	4.174	0.115	-0.93847
2/21/2007 15:50:21	57021.0	630.0	4.15	4.169	0.111	-0.95584

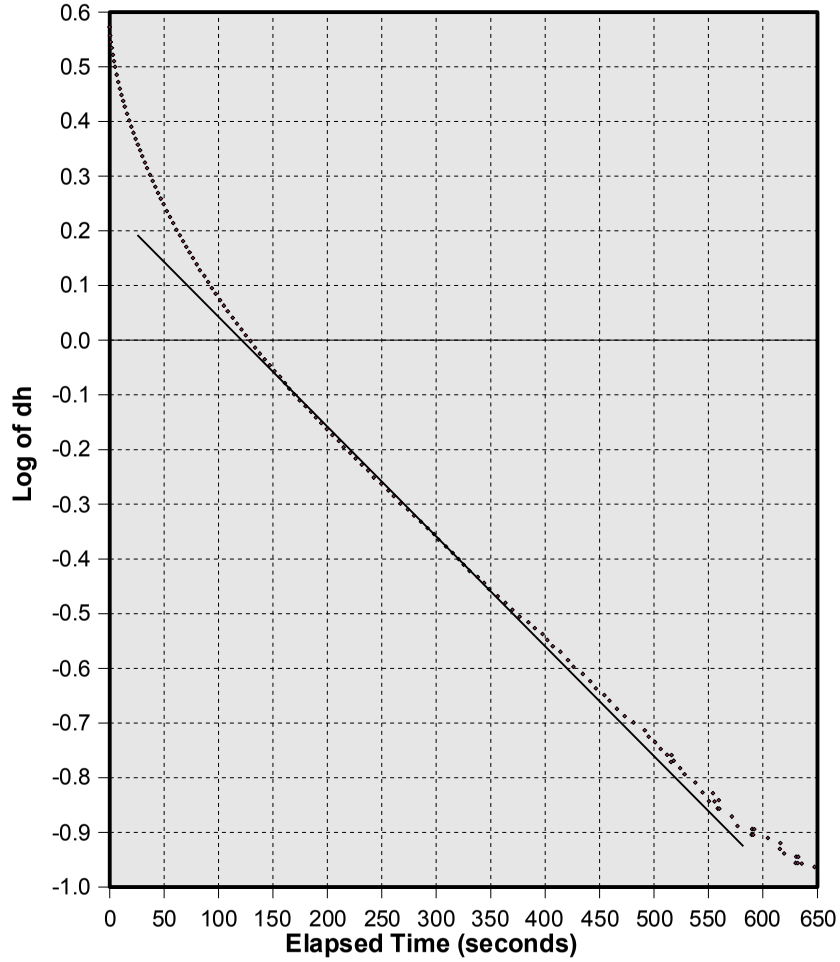
Slug Test P3-9

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:50:21	57021.5	630.5	4.15	4.172	0.114	-0.94432
2/21/2007 15:50:23	57023.0	632.0	4.15	4.169	0.111	-0.95623
2/21/2007 15:50:23	57023.5	632.5	4.15	4.172	0.114	-0.94470
2/21/2007 15:50:26	57026.5	635.5	4.15	4.169	0.110	-0.95691
2/21/2007 15:50:38	57038.5	647.5	4.15	4.168	0.109	-0.96322

Slug Test P3-9

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	15.67	ft
Stick up height:	3.08	ft
Depth to sand pack (BGS):	4.50	ft
Depth to screened interval (BGS):	5.67	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	3.73	ft
Initial Head Change:	3.74	ft
Total well length:	18.75	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	0.95	ft
Drawdown at time = t (y_t):	0.32	ft
Elapsed Time between y_0 and y_t (t):	238	sec
Initial water column in well (L_w):	15.02	ft
$\ln(R_e/r_w)$ =	2.16	
K =	3.48E-06	ft/sec
	1.06E-04	**cm/sec**
	109.59	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-10S

Initial offset in logger reading (feet):	0.118	Date:	12/12/2006
Offset increment in logger reading (feet/sec):	0.000023		
Initial depth to water table (feet):	6.05		
Depth of probe below water table (feet):	2.320		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:48:02	49682.5	0.0	7	6.877	4.557	0.65869
12/12/2006 13:48:03	49683.0	0.5	6.87	6.747	4.427	0.64612
12/12/2006 13:48:03	49683.5	1.0	6.69	6.565	4.245	0.62788
12/12/2006 13:48:04	49684.0	1.5	6.56	6.442	4.122	0.61511
12/12/2006 13:48:04	49684.5	2.0	6.46	6.342	4.022	0.60444
12/12/2006 13:48:05	49685.0	2.5	6.37	6.249	3.929	0.59428
12/12/2006 13:48:05	49685.5	3.0	6.29	6.165	3.845	0.58490
12/12/2006 13:48:06	49686.0	3.5	6.21	6.088	3.768	0.57611
12/12/2006 13:48:06	49686.5	4.0	6.14	6.017	3.697	0.56785
12/12/2006 13:48:07	49687.0	4.5	6.07	5.949	3.629	0.55978
12/12/2006 13:48:07	49687.5	5.0	6.01	5.885	3.565	0.55205
12/12/2006 13:48:08	49688.0	5.5	5.94	5.823	3.503	0.54443
12/12/2006 13:48:08	49688.5	6.0	5.88	5.761	3.441	0.53668
12/12/2006 13:48:09	49689.0	6.5	5.82	5.703	3.383	0.52929
12/12/2006 13:48:09	49689.5	7.0	5.77	5.648	3.328	0.52217
12/12/2006 13:48:10	49690.0	7.5	5.72	5.595	3.275	0.51520
12/12/2006 13:48:10	49690.5	8.0	5.67	5.544	3.224	0.50838
12/12/2006 13:48:11	49691.0	8.5	5.61	5.493	3.173	0.50145
12/12/2006 13:48:11	49691.5	9.0	5.57	5.445	3.125	0.49483
12/12/2006 13:48:12	49692.0	9.5	5.52	5.398	3.078	0.48825
12/12/2006 13:48:12	49692.5	10.0	5.47	5.352	3.032	0.48171
12/12/2006 13:48:13	49693.0	10.5	5.43	5.305	2.985	0.47492
12/12/2006 13:48:13	49693.5	11.0	5.38	5.261	2.941	0.46847
12/12/2006 13:48:14	49694.0	11.5	5.34	5.219	2.899	0.46222
12/12/2006 13:48:14	49694.5	12.0	5.3	5.175	2.855	0.45557
12/12/2006 13:48:15	49695.0	12.5	5.25	5.132	2.812	0.44898
12/12/2006 13:48:15	49695.5	13.0	5.21	5.090	2.770	0.44244
12/12/2006 13:48:16	49696.0	13.5	5.17	5.048	2.728	0.43581
12/12/2006 13:48:16	49696.5	14.0	5.13	5.006	2.686	0.42907
12/12/2006 13:48:17	49697.0	14.5	5.09	4.968	2.648	0.42287
12/12/2006 13:48:17	49697.5	15.0	5.05	4.928	2.608	0.41626
12/12/2006 13:48:18	49698.0	15.5	5.01	4.888	2.568	0.40955
12/12/2006 13:48:18	49698.5	16.0	4.97	4.851	2.531	0.40324
12/12/2006 13:48:19	49699.0	16.5	4.94	4.815	2.495	0.39702
12/12/2006 13:48:19	49699.5	17.0	4.9	4.777	2.457	0.39035
12/12/2006 13:48:20	49700.0	17.5	4.87	4.744	2.424	0.38447
12/12/2006 13:48:20	49700.5	18.0	4.83	4.708	2.388	0.37797
12/12/2006 13:48:21	49701.0	18.5	4.79	4.672	2.352	0.37137
12/12/2006 13:48:21	49701.5	19.0	4.76	4.639	2.319	0.36523
12/12/2006 13:48:22	49702.0	19.5	4.73	4.606	2.286	0.35900
12/12/2006 13:48:22	49702.5	20.0	4.69	4.572	2.252	0.35249
12/12/2006 13:48:23	49703.0	20.5	4.66	4.539	2.219	0.34608
12/12/2006 13:48:23	49703.5	21.0	4.63	4.510	2.190	0.34036
12/12/2006 13:48:24	49704.0	21.5	4.6	4.479	2.159	0.33417

Slug Test P3-10S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:48:24	49704.5	22.0	4.57	4.450	2.130	0.32829
12/12/2006 13:48:25	49705.0	22.5	4.54	4.418	2.098	0.32171
12/12/2006 13:48:25	49705.5	23.0	4.51	4.389	2.069	0.31566
12/12/2006 13:48:26	49706.0	23.5	4.48	4.360	2.040	0.30953
12/12/2006 13:48:26	49706.5	24.0	4.45	4.331	2.011	0.30331
12/12/2006 13:48:27	49707.0	24.5	4.43	4.305	1.985	0.29765
12/12/2006 13:48:27	49707.5	25.0	4.4	4.278	1.957	0.29170
12/12/2006 13:48:28	49708.0	25.5	4.37	4.251	1.930	0.28567
12/12/2006 13:48:28	49708.5	26.0	4.35	4.224	1.903	0.27955
12/12/2006 13:48:29	49709.0	26.5	4.32	4.199	1.878	0.27380
12/12/2006 13:48:29	49709.5	27.0	4.3	4.175	1.854	0.26821
12/12/2006 13:48:30	49710.0	27.5	4.27	4.150	1.829	0.26232
12/12/2006 13:48:30	49710.5	28.0	4.25	4.128	1.807	0.25706
12/12/2006 13:48:31	49711.0	28.5	4.22	4.103	1.782	0.25101
12/12/2006 13:48:31	49711.5	29.0	4.2	4.081	1.760	0.24561
12/12/2006 13:48:32	49712.0	29.5	4.18	4.056	1.735	0.23940
12/12/2006 13:48:32	49712.5	30.0	4.16	4.034	1.713	0.23385
12/12/2006 13:48:33	49713.0	30.5	4.13	4.011	1.690	0.22798
12/12/2006 13:48:33	49713.5	31.0	4.11	3.989	1.668	0.22229
12/12/2006 13:48:34	49714.0	31.5	4.09	3.969	1.648	0.21705
12/12/2006 13:48:34	49714.5	32.0	4.07	3.949	1.628	0.21174
12/12/2006 13:48:35	49715.0	32.5	4.05	3.928	1.607	0.20610
12/12/2006 13:48:35	49715.5	33.0	4.03	3.908	1.587	0.20066
12/12/2006 13:48:36	49716.0	33.5	4.01	3.888	1.567	0.19515
12/12/2006 13:48:36	49716.5	34.0	3.99	3.868	1.547	0.18957
12/12/2006 13:48:37	49717.0	34.5	3.97	3.850	1.529	0.18448
12/12/2006 13:48:37	49717.5	35.0	3.95	3.830	1.509	0.17876
12/12/2006 13:48:38	49718.0	35.5	3.93	3.812	1.491	0.17355
12/12/2006 13:48:38	49718.5	36.0	3.92	3.794	1.473	0.16827
12/12/2006 13:48:39	49719.0	36.5	3.9	3.776	1.455	0.16293
12/12/2006 13:48:39	49719.5	37.0	3.88	3.758	1.437	0.15752
12/12/2006 13:48:40	49720.5	38.0	3.85	3.723	1.403	0.14712
12/12/2006 13:48:41	49721.5	39.0	3.81	3.689	1.369	0.13646
12/12/2006 13:48:42	49722.0	39.5	3.8	3.673	1.353	0.13135
12/12/2006 13:48:43	49723.0	40.5	3.76	3.642	1.322	0.12128
12/12/2006 13:48:43	49723.5	41.0	3.75	3.626	1.306	0.11598
12/12/2006 13:48:44	49724.5	42.0	3.72	3.597	1.277	0.10622
12/12/2006 13:48:45	49725.5	43.0	3.69	3.568	1.248	0.09624
12/12/2006 13:48:46	49726.5	44.0	3.66	3.540	1.220	0.08638
12/12/2006 13:48:47	49727.5	45.0	3.64	3.514	1.194	0.07701
12/12/2006 13:48:48	49728.0	45.5	3.62	3.500	1.180	0.07189
12/12/2006 13:48:49	49729.0	46.5	3.6	3.475	1.155	0.06258
12/12/2006 13:48:49	49729.5	47.0	3.58	3.461	1.141	0.05728
12/12/2006 13:48:50	49730.5	48.0	3.56	3.437	1.117	0.04804
12/12/2006 13:48:51	49731.5	49.0	3.54	3.414	1.094	0.03899
12/12/2006 13:48:52	49732.5	50.0	3.51	3.391	1.071	0.02975
12/12/2006 13:48:53	49733.0	50.5	3.5	3.378	1.058	0.02444
12/12/2006 13:48:54	49734.0	51.5	3.48	3.358	1.038	0.01615
12/12/2006 13:48:54	49734.5	52.0	3.47	3.346	1.026	0.01109

Slug Test P3-10S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:48:55	49735.5	53.0	3.45	3.324	1.004	0.00167
12/12/2006 13:48:56	49736.5	54.0	3.43	3.303	0.983	-0.00753
12/12/2006 13:48:57	49737.5	55.0	3.41	3.283	0.963	-0.01647
12/12/2006 13:48:58	49738.5	56.0	3.39	3.265	0.945	-0.02467
12/12/2006 13:48:59	49739.5	57.0	3.37	3.246	0.926	-0.03351
12/12/2006 13:49:00	49740.0	57.5	3.36	3.235	0.915	-0.03870
12/12/2006 13:49:01	49741.0	58.5	3.34	3.217	0.897	-0.04735
12/12/2006 13:49:02	49742.0	59.5	3.32	3.201	0.881	-0.05518
12/12/2006 13:49:03	49743.0	60.5	3.31	3.183	0.863	-0.06416
12/12/2006 13:49:04	49744.0	61.5	3.29	3.165	0.845	-0.07333
12/12/2006 13:49:05	49745.0	62.5	3.27	3.151	0.831	-0.08060
12/12/2006 13:49:05	49745.5	63.0	3.26	3.140	0.820	-0.08639
12/12/2006 13:49:06	49746.5	64.0	3.25	3.126	0.806	-0.09389
12/12/2006 13:49:07	49747.5	65.0	3.23	3.110	0.790	-0.10261
12/12/2006 13:49:08	49748.5	66.0	3.22	3.094	0.774	-0.11152
12/12/2006 13:49:09	49749.5	67.0	3.2	3.081	0.761	-0.11889
12/12/2006 13:49:10	49750.5	68.0	3.19	3.067	0.746	-0.12697
12/12/2006 13:49:11	49751.5	69.0	3.18	3.053	0.732	-0.13521
12/12/2006 13:49:12	49752.5	70.0	3.16	3.040	0.719	-0.14300
12/12/2006 13:49:13	49753.5	71.0	3.15	3.026	0.705	-0.15155
12/12/2006 13:49:14	49754.5	72.0	3.13	3.012	0.691	-0.16027
12/12/2006 13:49:15	49755.5	73.0	3.12	3.001	0.680	-0.16725
12/12/2006 13:49:16	49756.5	74.0	3.11	2.987	0.666	-0.17629
12/12/2006 13:49:17	49757.5	75.0	3.1	2.976	0.655	-0.18354
12/12/2006 13:49:18	49758.5	76.0	3.09	2.964	0.643	-0.19158
12/12/2006 13:49:19	49759.5	77.0	3.08	2.953	0.632	-0.19909
12/12/2006 13:49:20	49760.5	78.0	3.07	2.944	0.623	-0.20533
12/12/2006 13:49:21	49761.5	79.0	3.05	2.932	0.611	-0.21379
12/12/2006 13:49:22	49762.5	80.0	3.04	2.921	0.600	-0.22169
12/12/2006 13:49:23	49763.0	80.5	3.04	2.914	0.593	-0.22679
12/12/2006 13:49:24	49764.0	81.5	3.03	2.904	0.584	-0.23345
12/12/2006 13:49:25	49765.0	82.5	3.02	2.895	0.575	-0.24021
12/12/2006 13:49:25	49765.5	83.0	3.01	2.888	0.568	-0.24554
12/12/2006 13:49:26	49766.5	84.0	3	2.879	0.559	-0.25249
12/12/2006 13:49:27	49767.5	85.0	2.99	2.870	0.550	-0.25956
12/12/2006 13:49:28	49768.5	86.0	2.98	2.861	0.541	-0.26674
12/12/2006 13:49:29	49769.0	86.5	2.98	2.854	0.534	-0.27240
12/12/2006 13:49:30	49770.0	87.5	2.97	2.847	0.527	-0.27815
12/12/2006 13:49:31	49771.0	88.5	2.96	2.835	0.515	-0.28818
12/12/2006 13:49:32	49772.0	89.5	2.95	2.829	0.509	-0.29329
12/12/2006 13:49:33	49773.0	90.5	2.94	2.819	0.499	-0.30192
12/12/2006 13:49:34	49774.0	91.5	2.93	2.810	0.490	-0.30985
12/12/2006 13:49:35	49775.0	92.5	2.93	2.803	0.483	-0.31612
12/12/2006 13:49:36	49776.0	93.5	2.92	2.794	0.474	-0.32431
12/12/2006 13:49:37	49777.0	94.5	2.91	2.788	0.468	-0.32986
12/12/2006 13:49:38	49778.0	95.5	2.9	2.781	0.461	-0.33643
12/12/2006 13:49:39	49779.0	96.5	2.9	2.772	0.452	-0.34502
12/12/2006 13:49:40	49780.0	97.5	2.89	2.765	0.445	-0.35182
12/12/2006 13:49:41	49781.0	98.5	2.88	2.758	0.438	-0.35874

Slug Test P3-10S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:49:41	49781.5	99.0	2.88	2.753	0.433	-0.36374
12/12/2006 13:49:42	49782.5	100.0	2.87	2.746	0.426	-0.37084
12/12/2006 13:49:43	49783.5	101.0	2.86	2.739	0.419	-0.37807
12/12/2006 13:49:44	49784.5	102.0	2.86	2.732	0.412	-0.38541
12/12/2006 13:49:45	49785.5	103.0	2.85	2.726	0.406	-0.39181
12/12/2006 13:49:46	49786.5	104.0	2.84	2.719	0.399	-0.39940
12/12/2006 13:49:47	49787.5	105.0	2.84	2.714	0.394	-0.40490
12/12/2006 13:49:48	49788.5	106.0	2.83	2.707	0.387	-0.41272
12/12/2006 13:49:49	49789.5	107.0	2.82	2.698	0.378	-0.42298
12/12/2006 13:49:51	49791.0	108.5	2.81	2.691	0.371	-0.43115
12/12/2006 13:49:52	49792.0	109.5	2.81	2.685	0.365	-0.43826
12/12/2006 13:49:53	49793.0	110.5	2.8	2.680	0.360	-0.44429
12/12/2006 13:49:54	49794.0	111.5	2.8	2.673	0.352	-0.45286
12/12/2006 13:49:55	49795.0	112.5	2.79	2.668	0.347	-0.45909
12/12/2006 13:49:55	49795.5	113.0	2.79	2.664	0.343	-0.46413
12/12/2006 13:49:56	49796.5	114.0	2.78	2.659	0.338	-0.47053
12/12/2006 13:49:57	49797.0	114.5	2.78	2.655	0.334	-0.47571
12/12/2006 13:49:58	49798.0	115.5	2.77	2.650	0.329	-0.48228
12/12/2006 13:49:59	49799.0	116.5	2.77	2.646	0.325	-0.48762
12/12/2006 13:50:00	49800.0	117.5	2.76	2.641	0.320	-0.49438
12/12/2006 13:50:01	49801.0	118.5	2.76	2.634	0.313	-0.50401
12/12/2006 13:50:02	49802.0	119.5	2.75	2.630	0.309	-0.50962
12/12/2006 13:50:03	49803.0	120.5	2.75	2.625	0.304	-0.51673
12/12/2006 13:50:04	49804.0	121.5	2.74	2.621	0.300	-0.52251
12/12/2006 13:50:05	49805.0	122.5	2.74	2.616	0.295	-0.52984
12/12/2006 13:50:06	49806.0	123.5	2.73	2.609	0.288	-0.54029
12/12/2006 13:50:07	49807.0	124.5	2.73	2.603	0.283	-0.54793
12/12/2006 13:50:08	49808.5	126.0	2.72	2.599	0.279	-0.55416
12/12/2006 13:50:09	49809.0	126.5	2.72	2.594	0.274	-0.56203
12/12/2006 13:50:10	49810.0	127.5	2.71	2.590	0.270	-0.56845
12/12/2006 13:50:11	49811.0	128.5	2.71	2.585	0.265	-0.57660
12/12/2006 13:50:12	49812.5	130.0	2.71	2.581	0.261	-0.58326
12/12/2006 13:50:13	49813.5	131.0	2.7	2.576	0.256	-0.59170
12/12/2006 13:50:15	49815.0	132.5	2.7	2.572	0.252	-0.59860
12/12/2006 13:50:15	49815.5	133.0	2.69	2.569	0.249	-0.60382
12/12/2006 13:50:16	49816.5	134.0	2.69	2.565	0.245	-0.61090
12/12/2006 13:50:17	49817.0	134.5	2.69	2.562	0.242	-0.61627
12/12/2006 13:50:18	49818.0	135.5	2.68	2.558	0.238	-0.62355
12/12/2006 13:50:19	49819.5	137.0	2.68	2.551	0.231	-0.63659
12/12/2006 13:50:21	49821.0	138.5	2.67	2.547	0.227	-0.64424
12/12/2006 13:50:21	49821.5	139.0	2.67	2.544	0.224	-0.65005
12/12/2006 13:50:23	49823.0	140.5	2.66	2.540	0.220	-0.65794
12/12/2006 13:50:24	49824.0	141.5	2.66	2.535	0.215	-0.66798
12/12/2006 13:50:25	49825.5	143.0	2.66	2.531	0.211	-0.67622
12/12/2006 13:50:26	49826.0	143.5	2.65	2.528	0.208	-0.68247
12/12/2006 13:50:27	49827.5	145.0	2.65	2.524	0.204	-0.69099
12/12/2006 13:50:28	49828.5	146.0	2.64	2.520	0.200	-0.69965
12/12/2006 13:50:29	49829.0	146.5	2.64	2.517	0.197	-0.70625
12/12/2006 13:50:31	49831.0	148.5	2.64	2.513	0.193	-0.71528

Slug Test P3-10S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:50:31	49831.5	149.0	2.63	2.510	0.190	-0.72212
12/12/2006 13:50:33	49833.0	150.5	2.63	2.506	0.186	-0.73146
12/12/2006 13:50:34	49834.0	151.5	2.63	2.503	0.183	-0.73860
12/12/2006 13:50:35	49835.5	153.0	2.62	2.499	0.179	-0.74830
12/12/2006 13:50:37	49837.0	154.5	2.62	2.495	0.174	-0.75823
12/12/2006 13:50:38	49838.0	155.5	2.62	2.492	0.171	-0.76582
12/12/2006 13:50:38	49838.5	156.0	2.61	2.490	0.169	-0.77095
12/12/2006 13:50:40	49840.0	157.5	2.61	2.488	0.167	-0.77619
12/12/2006 13:50:40	49840.5	158.0	2.61	2.485	0.164	-0.78408
12/12/2006 13:50:41	49841.5	159.0	2.61	2.483	0.162	-0.78945
12/12/2006 13:50:42	49842.5	160.0	2.61	2.481	0.160	-0.79490
12/12/2006 13:50:43	49843.5	161.0	2.6	2.479	0.158	-0.80041
12/12/2006 13:50:44	49844.0	161.5	2.6	2.476	0.155	-0.80875
12/12/2006 13:50:45	49845.0	162.5	2.6	2.474	0.153	-0.81445
12/12/2006 13:50:46	49846.0	163.5	2.6	2.472	0.151	-0.82022
12/12/2006 13:50:47	49847.0	164.5	2.59	2.470	0.149	-0.82606
12/12/2006 13:50:47	49847.5	165.0	2.59	2.467	0.146	-0.83492
12/12/2006 13:50:48	49848.0	165.5	2.59	2.465	0.144	-0.84093
12/12/2006 13:50:49	49849.5	167.0	2.59	2.462	0.142	-0.84710
12/12/2006 13:50:50	49850.5	168.0	2.59	2.460	0.140	-0.85333
12/12/2006 13:50:51	49851.5	169.0	2.58	2.457	0.137	-0.86279
12/12/2006 13:50:52	49852.0	169.5	2.58	2.455	0.135	-0.86921
12/12/2006 13:50:53	49853.5	171.0	2.58	2.453	0.133	-0.87580
12/12/2006 13:50:55	49855.0	172.5	2.58	2.450	0.130	-0.88582
12/12/2006 13:50:55	49855.5	173.0	2.57	2.448	0.128	-0.89259
12/12/2006 13:50:57	49857.0	174.5	2.57	2.446	0.126	-0.89954
12/12/2006 13:50:57	49857.5	175.0	2.57	2.444	0.124	-0.90653
12/12/2006 13:50:59	49859.5	177.0	2.57	2.441	0.121	-0.91733
12/12/2006 13:51:00	49860.0	177.5	2.56	2.439	0.119	-0.92461
12/12/2006 13:51:01	49861.0	178.5	2.56	2.437	0.117	-0.93206
12/12/2006 13:51:02	49862.5	180.0	2.56	2.435	0.115	-0.93969
12/12/2006 13:51:04	49864.0	181.5	2.56	2.432	0.112	-0.95131
12/12/2006 13:51:05	49865.5	183.0	2.56	2.430	0.110	-0.95929
12/12/2006 13:51:06	49866.0	183.5	2.55	2.428	0.108	-0.96731
12/12/2006 13:51:07	49867.5	185.0	2.55	2.425	0.105	-0.97971
12/12/2006 13:51:08	49868.0	185.5	2.55	2.423	0.103	-0.98813
12/12/2006 13:51:09	49869.5	187.0	2.55	2.421	0.101	-0.99682
12/12/2006 13:51:11	49871.0	188.5	2.54	2.419	0.099	-1.00568
12/12/2006 13:51:12	49872.0	189.5	2.54	2.416	0.096	-1.01919
12/12/2006 13:51:12	49872.5	190.0	2.54	2.419	0.099	-1.00583
12/12/2006 13:51:13	49873.0	190.5	2.54	2.416	0.096	-1.01929
12/12/2006 13:51:14	49874.0	191.5	2.54	2.414	0.094	-1.02858
12/12/2006 13:51:15	49875.0	192.5	2.54	2.412	0.092	-1.03807
12/12/2006 13:51:16	49876.0	193.5	2.53	2.409	0.089	-1.05264
12/12/2006 13:51:18	49878.0	195.5	2.53	2.407	0.087	-1.06279
12/12/2006 13:51:19	49879.5	197.0	2.53	2.405	0.085	-1.07312
12/12/2006 13:51:21	49881.0	198.5	2.53	2.403	0.082	-1.08371
12/12/2006 13:51:22	49882.0	199.5	2.53	2.401	0.080	-1.09450
12/12/2006 13:51:22	49882.5	200.0	2.53	2.403	0.082	-1.08389

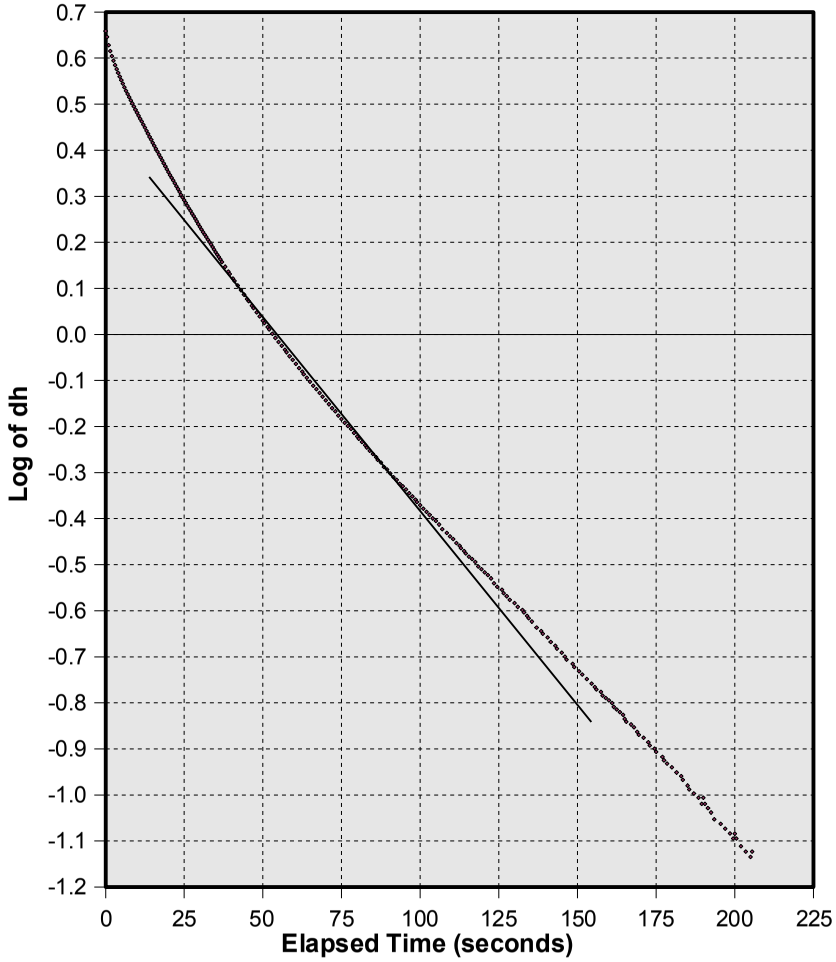
Slug Test P3-10S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:51:23	49883.0	200.5	2.53	2.401	0.080	-1.09462
12/12/2006 13:51:24	49884.5	202.0	2.52	2.398	0.077	-1.11133
12/12/2006 13:51:26	49886.0	203.5	2.52	2.396	0.075	-1.12290
12/12/2006 13:51:27	49887.5	205.0	2.52	2.394	0.073	-1.13479
12/12/2006 13:51:28	49888.0	205.5	2.52	2.396	0.075	-1.12317

Slug Test P3-10S

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	16.12	ft
Stick up height:	3.25	ft
Depth to sand pack (BGS):	5.15	ft
Depth to screened interval (BGS):	6.12	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	6.05	ft
Initial Head Change:	4.56	ft
Total well length:	19.37	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.32	ft
Drawdown at time = t (y_t):	0.46	ft
Elapsed Time between y_0 and y_t (t):	54.5	sec
Initial water column in well (L_w):	13.32	ft
$\ln(R_e/r_w)$ =	2.11	
K =	1.41E-05	ft/sec
	4.29E-04	**cm/sec**
	443.95	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-10D

Initial offset in logger reading (feet):	-0.038	Date:	12/12/2006
Offset increment in logger reading (feet/sec):	0.000338		
Initial depth to water table (feet):	6.81		
Depth of probe below water table (feet):	1.764		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 22:42:24	81744.0	0.0	7.86	7.834	6.070	0.78321
12/12/2006 22:42:25	81745.0	1.0	7.71	7.692	5.928	0.77291
12/12/2006 22:42:26	81746.0	2.0	7.63	7.604	5.840	0.76639
12/12/2006 22:42:27	81747.0	3.0	7.54	7.519	5.755	0.76007
12/12/2006 22:42:28	81748.0	4.0	7.46	7.433	5.669	0.75350
12/12/2006 22:42:29	81749.0	5.0	7.38	7.354	5.590	0.74738
12/12/2006 22:42:30	81750.0	6.0	7.3	7.273	5.509	0.74110
12/12/2006 22:42:31	81751.0	7.0	7.22	7.200	5.436	0.73528
12/12/2006 22:42:32	81752.0	8.0	7.15	7.124	5.361	0.72922
12/12/2006 22:42:33	81753.0	9.0	7.08	7.055	5.291	0.72356
12/12/2006 22:42:34	81754.0	10.0	7.01	6.987	5.223	0.71792
12/12/2006 22:42:35	81755.0	11.0	6.95	6.919	5.156	0.71228
12/12/2006 22:42:36	81756.0	12.0	6.88	6.855	5.091	0.70683
12/12/2006 22:42:37	81757.0	13.0	6.82	6.793	5.029	0.70148
12/12/2006 22:42:38	81758.0	14.0	6.76	6.732	4.969	0.69623
12/12/2006 22:42:39	81759.0	15.0	6.7	6.674	4.910	0.69110
12/12/2006 22:42:40	81760.0	16.0	6.64	6.614	4.850	0.68573
12/12/2006 22:42:41	81761.5	17.5	6.56	6.529	4.765	0.67810
12/12/2006 22:42:43	81763.0	19.0	6.48	6.449	4.685	0.67070
12/12/2006 22:42:44	81764.5	20.5	6.4	6.368	4.604	0.66317
12/12/2006 22:42:46	81766.0	22.0	6.32	6.290	4.526	0.65570
12/12/2006 22:42:47	81767.5	23.5	6.25	6.216	4.452	0.64859
12/12/2006 22:42:49	81769.0	25.0	6.17	6.142	4.378	0.64126
12/12/2006 22:42:50	81770.5	26.5	6.1	6.070	4.306	0.63411
12/12/2006 22:42:52	81772.0	28.0	6.03	6.001	4.237	0.62704
12/12/2006 22:42:53	81773.5	29.5	5.97	5.935	4.171	0.62028
12/12/2006 22:42:55	81775.0	31.0	5.9	5.868	4.104	0.61319
12/12/2006 22:42:56	81776.5	32.5	5.84	5.802	4.038	0.60620
12/12/2006 22:42:58	81778.0	34.0	5.77	5.740	3.976	0.59943
12/12/2006 22:42:59	81779.5	35.5	5.71	5.678	3.914	0.59266
12/12/2006 22:43:01	81781.0	37.0	5.65	5.618	3.854	0.58589
12/12/2006 22:43:02	81782.5	38.5	5.59	5.559	3.795	0.57925
12/12/2006 22:43:04	81784.0	40.0	5.54	5.503	3.739	0.57273
12/12/2006 22:43:05	81785.5	41.5	5.48	5.444	3.680	0.56588
12/12/2006 22:43:07	81787.0	43.0	5.43	5.390	3.626	0.55940
12/12/2006 22:43:08	81788.5	44.5	5.37	5.333	3.569	0.55258
12/12/2006 22:43:10	81790.0	46.0	5.32	5.282	3.518	0.54627
12/12/2006 22:43:11	81791.5	47.5	5.27	5.227	3.463	0.53949
12/12/2006 22:43:13	81793.0	49.0	5.21	5.176	3.412	0.53298
12/12/2006 22:43:14	81794.5	50.5	5.17	5.126	3.362	0.52663
12/12/2006 22:43:16	81796.0	52.0	5.12	5.076	3.312	0.52006
12/12/2006 22:43:17	81797.5	53.5	5.07	5.026	3.262	0.51352
12/12/2006 22:43:19	81799.0	55.0	5.02	4.979	3.215	0.50715
12/12/2006 22:43:20	81800.5	56.5	4.97	4.931	3.167	0.50068

Slug Test P3-10D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 22:43:22	81802.0	58.0	4.93	4.886	3.122	0.49440
12/12/2006 22:43:23	81803.5	59.5	4.88	4.841	3.077	0.48816
12/12/2006 22:43:25	81805.0	61.0	4.84	4.796	3.032	0.48169
12/12/2006 22:43:26	81806.5	62.5	4.79	4.750	2.986	0.47512
12/12/2006 22:43:28	81808.0	64.0	4.75	4.708	2.944	0.46889
12/12/2006 22:43:29	81809.5	65.5	4.71	4.666	2.902	0.46273
12/12/2006 22:43:31	81811.0	67.0	4.67	4.626	2.862	0.45662
12/12/2006 22:43:32	81812.5	68.5	4.63	4.582	2.818	0.44997
12/12/2006 22:43:34	81814.0	70.0	4.59	4.544	2.780	0.44399
12/12/2006 22:43:35	81815.5	71.5	4.55	4.505	2.741	0.43794
12/12/2006 22:43:37	81817.0	73.0	4.51	4.465	2.701	0.43147
12/12/2006 22:43:38	81818.5	74.5	4.48	4.428	2.664	0.42556
12/12/2006 22:43:40	81820.0	76.0	4.44	4.390	2.626	0.41924
12/12/2006 22:43:41	81821.5	77.5	4.4	4.353	2.589	0.41316
12/12/2006 22:43:43	81823.0	79.0	4.37	4.317	2.554	0.40716
12/12/2006 22:43:44	81824.5	80.5	4.33	4.283	2.519	0.40125
12/12/2006 22:43:46	81826.0	82.0	4.3	4.246	2.483	0.39491
12/12/2006 22:43:47	81827.5	83.5	4.26	4.213	2.449	0.38901
12/12/2006 22:43:49	81829.0	85.0	4.23	4.178	2.415	0.38285
12/12/2006 22:43:50	81830.5	86.5	4.2	4.147	2.383	0.37714
12/12/2006 22:43:52	81832.0	88.0	4.17	4.114	2.351	0.37118
12/12/2006 22:43:53	81833.5	89.5	4.13	4.081	2.317	0.36494
12/12/2006 22:43:55	81835.0	91.0	4.1	4.048	2.285	0.35881
12/12/2006 22:43:56	81836.5	92.5	4.07	4.017	2.253	0.35278
12/12/2006 22:43:58	81838.0	94.0	4.04	3.987	2.224	0.34705
12/12/2006 22:43:59	81839.5	95.5	4.01	3.958	2.194	0.34125
12/12/2006 22:44:01	81841.0	97.0	3.98	3.928	2.165	0.33537
12/12/2006 22:44:02	81842.5	98.5	3.95	3.896	2.132	0.32880
12/12/2006 22:44:04	81844.0	100.0	3.93	3.869	2.106	0.32336
12/12/2006 22:44:05	81845.5	101.5	3.9	3.840	2.076	0.31723
12/12/2006 22:44:07	81847.0	103.0	3.87	3.812	2.049	0.31144
12/12/2006 22:44:08	81848.5	104.5	3.84	3.785	2.021	0.30557
12/12/2006 22:44:10	81850.0	106.0	3.82	3.757	1.994	0.29962
12/12/2006 22:44:11	81851.5	107.5	3.79	3.732	1.968	0.29403
12/12/2006 22:44:13	81853.0	109.0	3.76	3.705	1.941	0.28814
12/12/2006 22:44:14	81854.5	110.5	3.74	3.678	1.914	0.28194
12/12/2006 22:44:16	81856.0	112.0	3.71	3.652	1.888	0.27611
12/12/2006 22:44:17	81857.5	113.5	3.69	3.630	1.866	0.27091
12/12/2006 22:44:19	81859.0	115.0	3.67	3.604	1.840	0.26493
12/12/2006 22:44:20	81860.5	116.5	3.64	3.582	1.818	0.25958
12/12/2006 22:44:22	81862.0	118.0	3.62	3.558	1.794	0.25393
12/12/2006 22:44:23	81863.5	119.5	3.6	3.534	1.770	0.24796
12/12/2006 22:44:25	81865.0	121.0	3.57	3.511	1.747	0.24240
12/12/2006 22:44:26	81866.5	122.5	3.55	3.490	1.726	0.23702
12/12/2006 22:44:28	81868.0	124.0	3.53	3.467	1.703	0.23132
12/12/2006 22:44:29	81869.5	125.5	3.51	3.445	1.681	0.22555
12/12/2006 22:44:31	81871.0	127.0	3.49	3.424	1.660	0.22022
12/12/2006 22:44:32	81872.5	128.5	3.47	3.401	1.637	0.21402
12/12/2006 22:44:34	81874.0	130.0	3.45	3.380	1.616	0.20855

Slug Test P3-10D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 22:44:35	81875.5	131.5	3.43	3.360	1.596	0.20300
12/12/2006 22:44:37	81877.0	133.0	3.41	3.341	1.577	0.19794
12/12/2006 22:44:38	81878.5	134.5	3.39	3.321	1.557	0.19226
12/12/2006 22:44:40	81880.0	136.0	3.37	3.300	1.536	0.18650
12/12/2006 22:44:41	81881.5	137.5	3.35	3.282	1.518	0.18123
12/12/2006 22:44:43	81883.0	139.0	3.33	3.263	1.499	0.17591
12/12/2006 22:44:44	81884.5	140.5	3.31	3.245	1.481	0.17051
12/12/2006 22:44:46	81886.0	142.0	3.3	3.227	1.463	0.16535
12/12/2006 22:44:47	81887.5	143.5	3.28	3.207	1.443	0.15922
12/12/2006 22:44:49	81889.5	145.5	3.25	3.183	1.419	0.15203
12/12/2006 22:44:51	81891.0	147.0	3.24	3.165	1.401	0.14633
12/12/2006 22:44:53	81893.0	149.0	3.21	3.142	1.378	0.13924
12/12/2006 22:44:54	81894.5	150.5	3.2	3.123	1.359	0.13337
12/12/2006 22:44:56	81896.0	152.0	3.18	3.105	1.341	0.12742
12/12/2006 22:44:57	81897.5	153.5	3.16	3.089	1.325	0.12237
12/12/2006 22:44:59	81899.0	155.0	3.15	3.073	1.309	0.11692
12/12/2006 22:45:00	81900.5	156.5	3.13	3.057	1.293	0.11175
12/12/2006 22:45:02	81902.0	158.0	3.11	3.039	1.275	0.10549
12/12/2006 22:45:04	81904.0	160.0	3.09	3.018	1.254	0.09839
12/12/2006 22:45:05	81905.5	161.5	3.08	3.004	1.240	0.09334
12/12/2006 22:45:07	81907.0	163.0	3.06	2.986	1.222	0.08716
12/12/2006 22:45:08	81908.5	164.5	3.05	2.972	1.208	0.08197
12/12/2006 22:45:10	81910.5	166.5	3.03	2.954	1.190	0.07557
12/12/2006 22:45:12	81912.0	168.0	3.02	2.939	1.176	0.07024
12/12/2006 22:45:13	81913.5	169.5	3	2.924	1.160	0.06448
12/12/2006 22:45:15	81915.5	171.5	2.99	2.905	1.141	0.05743
12/12/2006 22:45:17	81917.5	173.5	2.97	2.887	1.123	0.05026
12/12/2006 22:45:19	81919.0	175.0	2.95	2.872	1.108	0.04462
12/12/2006 22:45:21	81921.0	177.0	2.94	2.856	1.093	0.03843
12/12/2006 22:45:22	81922.5	178.5	2.93	2.843	1.079	0.03303
12/12/2006 22:45:24	81924.5	180.5	2.91	2.824	1.060	0.02544
12/12/2006 22:45:26	81926.5	182.5	2.89	2.808	1.044	0.01856
12/12/2006 22:45:28	81928.5	184.5	2.88	2.792	1.028	0.01199
12/12/2006 22:45:30	81930.5	186.5	2.86	2.773	1.009	0.00402
12/12/2006 22:45:32	81932.5	188.5	2.85	2.759	0.996	-0.00190
12/12/2006 22:45:34	81934.0	190.0	2.83	2.748	0.984	-0.00695
12/12/2006 22:45:35	81935.5	191.5	2.82	2.735	0.972	-0.01250
12/12/2006 22:45:37	81937.0	193.0	2.81	2.724	0.960	-0.01768
12/12/2006 22:45:39	81939.0	195.0	2.8	2.708	0.944	-0.02483
12/12/2006 22:45:41	81941.0	197.0	2.78	2.695	0.931	-0.03116
12/12/2006 22:45:42	81942.5	198.5	2.77	2.682	0.918	-0.03704
12/12/2006 22:45:44	81944.0	200.0	2.76	2.671	0.907	-0.04251
12/12/2006 22:45:46	81946.0	202.0	2.75	2.659	0.895	-0.04814
12/12/2006 22:45:47	81947.5	203.5	2.74	2.647	0.884	-0.05376
12/12/2006 22:45:49	81949.5	205.5	2.73	2.634	0.870	-0.06054
12/12/2006 22:45:51	81951.5	207.5	2.71	2.620	0.856	-0.06742
12/12/2006 22:45:53	81953.5	209.5	2.7	2.608	0.845	-0.07338
12/12/2006 22:45:55	81955.5	211.5	2.69	2.594	0.830	-0.08099
12/12/2006 22:45:57	81957.0	213.0	2.68	2.584	0.820	-0.08600

Slug Test P3-10D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 22:45:59	81959.0	215.0	2.67	2.571	0.807	-0.09330
12/12/2006 22:46:01	81961.0	217.0	2.65	2.559	0.795	-0.09963
12/12/2006 22:46:02	81962.5	218.5	2.65	2.549	0.785	-0.10486
12/12/2006 22:46:04	81964.0	220.0	2.64	2.540	0.776	-0.11014
12/12/2006 22:46:05	81965.5	221.5	2.63	2.530	0.766	-0.11550
12/12/2006 22:46:07	81967.5	223.5	2.62	2.519	0.755	-0.12216
12/12/2006 22:46:09	81969.5	225.5	2.61	2.507	0.743	-0.12894
12/12/2006 22:46:11	81971.5	227.5	2.59	2.495	0.731	-0.13581
12/12/2006 22:46:13	81973.5	229.5	2.59	2.486	0.722	-0.14160
12/12/2006 22:46:15	81975.0	231.0	2.58	2.476	0.712	-0.14735
12/12/2006 22:46:17	81977.0	233.0	2.57	2.464	0.701	-0.15453
12/12/2006 22:46:19	81979.0	235.0	2.56	2.456	0.692	-0.15994
12/12/2006 22:46:21	81981.0	237.0	2.55	2.443	0.679	-0.16797
12/12/2006 22:46:23	81983.0	239.0	2.54	2.434	0.671	-0.17356
12/12/2006 22:46:25	81985.0	241.0	2.53	2.425	0.661	-0.17987
12/12/2006 22:46:27	81987.0	243.0	2.52	2.415	0.651	-0.18627
12/12/2006 22:46:29	81989.0	245.0	2.51	2.405	0.642	-0.19278
12/12/2006 22:46:31	81991.0	247.0	2.5	2.396	0.632	-0.19938
12/12/2006 22:46:33	81993.0	249.0	2.49	2.387	0.623	-0.20538
12/12/2006 22:46:34	81994.5	250.5	2.49	2.380	0.616	-0.21064
12/12/2006 22:46:36	81996.0	252.0	2.48	2.372	0.608	-0.21597
12/12/2006 22:46:38	81998.0	254.0	2.47	2.362	0.598	-0.22294
12/12/2006 22:46:40	82000.0	256.0	2.46	2.354	0.590	-0.22928
12/12/2006 22:46:42	82002.0	258.0	2.46	2.346	0.582	-0.23497
12/12/2006 22:46:44	82004.0	260.0	2.45	2.336	0.572	-0.24225
12/12/2006 22:46:46	82006.0	262.0	2.44	2.329	0.565	-0.24811
12/12/2006 22:46:47	82007.5	263.5	2.43	2.322	0.558	-0.25314
12/12/2006 22:46:49	82009.5	265.5	2.43	2.314	0.551	-0.25915
12/12/2006 22:46:51	82011.0	267.0	2.42	2.308	0.544	-0.26432
12/12/2006 22:46:53	82013.0	269.0	2.41	2.298	0.534	-0.27211
12/12/2006 22:46:55	82015.0	271.0	2.4	2.291	0.527	-0.27839
12/12/2006 22:46:57	82017.0	273.0	2.4	2.284	0.520	-0.28393
12/12/2006 22:46:59	82019.0	275.0	2.39	2.276	0.512	-0.29039
12/12/2006 22:47:00	82020.5	276.5	2.39	2.270	0.506	-0.29594
12/12/2006 22:47:02	82022.5	278.5	2.38	2.262	0.498	-0.30258
12/12/2006 22:47:04	82024.5	280.5	2.37	2.254	0.491	-0.30932
12/12/2006 22:47:06	82026.5	282.5	2.37	2.248	0.484	-0.31527
12/12/2006 22:47:08	82028.5	284.5	2.36	2.240	0.476	-0.32222
12/12/2006 22:47:10	82030.5	286.5	2.35	2.232	0.469	-0.32927
12/12/2006 22:47:13	82033.0	289.0	2.35	2.226	0.462	-0.33567
12/12/2006 22:47:14	82034.5	290.5	2.34	2.220	0.456	-0.34088
12/12/2006 22:47:17	82037.0	293.0	2.33	2.211	0.447	-0.34938
12/12/2006 22:47:19	82039.0	295.0	2.33	2.206	0.442	-0.35493
12/12/2006 22:47:21	82041.0	297.0	2.32	2.199	0.435	-0.36154
12/12/2006 22:47:22	82042.5	298.5	2.32	2.193	0.429	-0.36707
12/12/2006 22:47:25	82045.5	301.5	2.31	2.186	0.422	-0.37423
12/12/2006 22:47:26	82046.5	302.5	2.31	2.181	0.417	-0.37975
12/12/2006 22:47:29	82049.0	305.0	2.3	2.174	0.410	-0.38693
12/12/2006 22:47:31	82051.0	307.0	2.29	2.168	0.405	-0.39298

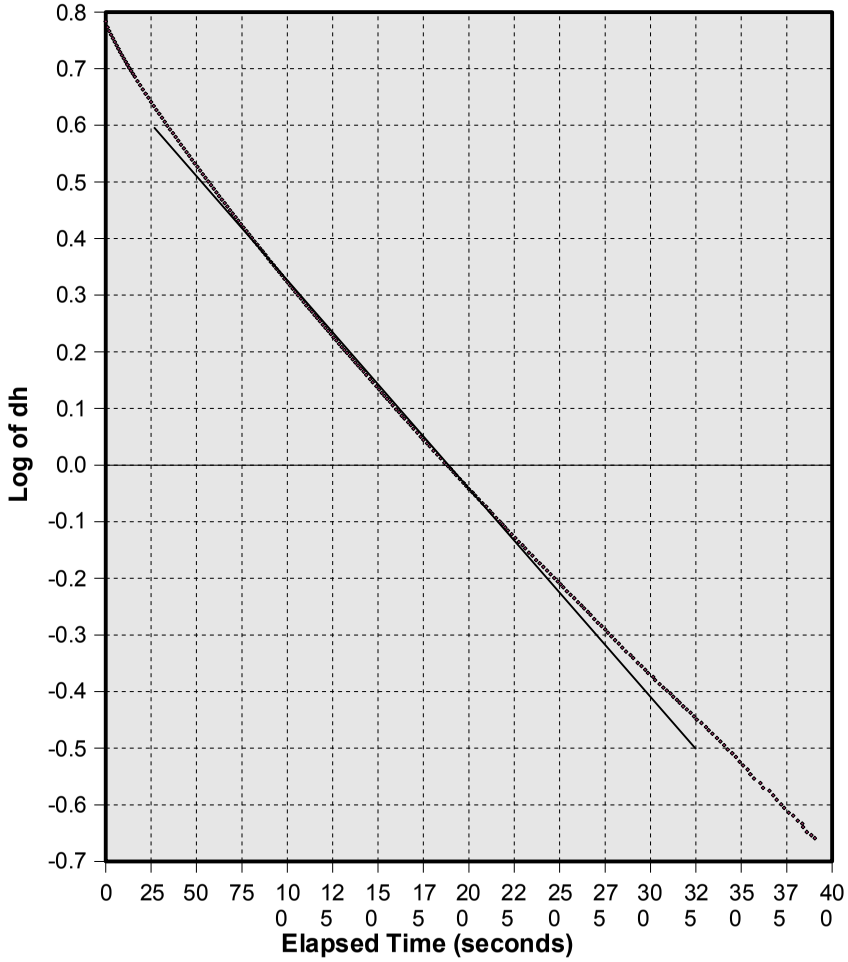
Slug Test P3-10D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 22:47:33	82053.0	309.0	2.29	2.164	0.400	-0.39803
12/12/2006 22:47:35	82055.0	311.0	2.29	2.159	0.395	-0.40314
12/12/2006 22:47:36	82056.5	312.5	2.28	2.154	0.390	-0.40923
12/12/2006 22:47:38	82058.5	314.5	2.28	2.149	0.385	-0.41448
12/12/2006 22:47:40	82060.0	316.0	2.27	2.144	0.381	-0.41959
12/12/2006 22:47:42	82062.0	318.0	2.27	2.139	0.375	-0.42612
12/12/2006 22:47:44	82064.0	320.0	2.26	2.134	0.370	-0.43157
12/12/2006 22:47:46	82066.0	322.0	2.26	2.129	0.366	-0.43709
12/12/2006 22:47:48	82068.0	324.0	2.26	2.124	0.360	-0.44388
12/12/2006 22:47:49	82069.5	325.5	2.25	2.119	0.355	-0.44936
12/12/2006 22:47:52	82072.0	328.0	2.25	2.114	0.350	-0.45532
12/12/2006 22:47:54	82074.5	330.5	2.24	2.109	0.345	-0.46262
12/12/2006 22:47:56	82076.0	332.0	2.24	2.104	0.340	-0.46834
12/12/2006 22:47:58	82078.0	334.0	2.23	2.099	0.335	-0.47435
12/12/2006 22:48:00	82080.5	336.5	2.23	2.093	0.330	-0.48198
12/12/2006 22:48:02	82082.5	338.5	2.23	2.089	0.325	-0.48819
12/12/2006 22:48:04	82084.5	340.5	2.22	2.084	0.320	-0.49448
12/12/2006 22:48:06	82086.5	342.5	2.22	2.078	0.315	-0.50225
12/12/2006 22:48:09	82089.0	345.0	2.21	2.074	0.310	-0.50899
12/12/2006 22:48:11	82091.0	347.0	2.21	2.069	0.305	-0.51559
12/12/2006 22:48:13	82093.0	349.0	2.2	2.063	0.299	-0.52375
12/12/2006 22:48:15	82095.0	351.0	2.2	2.059	0.295	-0.53059
12/12/2006 22:48:17	82097.5	353.5	2.2	2.054	0.290	-0.53778
12/12/2006 22:48:19	82099.0	355.0	2.19	2.048	0.284	-0.54611
12/12/2006 22:48:21	82101.0	357.0	2.19	2.044	0.280	-0.55332
12/12/2006 22:48:24	82104.5	360.5	2.18	2.038	0.275	-0.56144
12/12/2006 22:48:26	82106.0	362.0	2.18	2.033	0.269	-0.57024
12/12/2006 22:48:29	82109.5	365.5	2.18	2.030	0.266	-0.57541
12/12/2006 22:48:31	82111.5	367.5	2.17	2.025	0.261	-0.58311
12/12/2006 22:48:33	82113.5	369.5	2.17	2.020	0.256	-0.59096
12/12/2006 22:48:36	82116.0	372.0	2.16	2.015	0.252	-0.59924
12/12/2006 22:48:37	82117.5	373.5	2.16	2.012	0.248	-0.60534
12/12/2006 22:48:40	82120.0	376.0	2.16	2.007	0.243	-0.61390
12/12/2006 22:48:42	82122.5	378.5	2.15	2.004	0.240	-0.61901
12/12/2006 22:48:45	82125.0	381.0	2.15	1.999	0.236	-0.62785
12/12/2006 22:48:47	82127.5	383.5	2.15	1.997	0.233	-0.63313
12/12/2006 22:48:48	82128.0	384.0	2.15	1.993	0.230	-0.63908
12/12/2006 22:48:50	82130.0	386.0	2.14	1.989	0.225	-0.64802
12/12/2006 22:48:52	82132.5	388.5	2.14	1.986	0.222	-0.65355
12/12/2006 22:48:54	82134.5	390.5	2.14	1.983	0.219	-0.65881

Slug Test P3-10D

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	39.19	ft
Stick up height:	3.11	ft
Depth to sand pack (BGS):	28.00	ft
Depth to screened interval (BGS):	29.19	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	6.81	ft
Initial Head Change:	6.07	ft
Total well length:	42.30	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
C (dimensionless):	2.037	
Drawdown at time = 0 (y_0):	2.73	ft
Drawdown at time = t (y_t):	0.72	ft
Elapsed Time between y_0 and y_t (t):	158.5	sec
Initial water column in well (L_w):	35.49	ft
$\ln(R_e/r_w)$ =	3.22	
K =	9.43E-06	ft/sec
	2.87E-04	**cm/sec**
	297.24	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-11S

Initial offset in logger reading (feet):	-0.007	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	-0.000009		
Initial depth to water table (feet):	4.74		
Depth of probe below water table (feet):	2.509		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:38:06	49086.0	0.0	6.9	6.910	4.401	0.64357
2/21/2007 13:38:06	49086.5	0.5	6.58	6.586	4.077	0.61036
2/21/2007 13:38:07	49087.0	1.0	6.37	6.378	3.869	0.58762
2/21/2007 13:38:07	49087.5	1.5	6.31	6.317	3.808	0.58072
2/21/2007 13:38:08	49088.0	2.0	6.19	6.197	3.688	0.56682
2/21/2007 13:38:08	49088.5	2.5	6.12	6.124	3.615	0.55814
2/21/2007 13:38:09	49089.0	3.0	6.03	6.037	3.528	0.54756
2/21/2007 13:38:09	49089.5	3.5	5.95	5.962	3.453	0.53823
2/21/2007 13:38:10	49090.0	4.0	5.88	5.887	3.378	0.52869
2/21/2007 13:38:10	49090.5	4.5	5.81	5.814	3.305	0.51921
2/21/2007 13:38:11	49091.0	5.0	5.74	5.748	3.239	0.51045
2/21/2007 13:38:11	49091.5	5.5	5.67	5.682	3.173	0.50151
2/21/2007 13:38:12	49092.0	6.0	5.61	5.618	3.109	0.49266
2/21/2007 13:38:12	49092.5	6.5	5.55	5.560	3.051	0.48448
2/21/2007 13:38:13	49093.0	7.0	5.5	5.503	2.994	0.47629
2/21/2007 13:38:13	49093.5	7.5	5.44	5.447	2.938	0.46810
2/21/2007 13:38:14	49094.0	8.0	5.38	5.392	2.883	0.45989
2/21/2007 13:38:14	49094.5	8.5	5.33	5.341	2.832	0.45214
2/21/2007 13:38:15	49095.0	9.0	5.28	5.286	2.777	0.44362
2/21/2007 13:38:15	49095.5	9.5	5.23	5.242	2.733	0.43669
2/21/2007 13:38:16	49096.0	10.0	5.19	5.194	2.685	0.42900
2/21/2007 13:38:16	49096.5	10.5	5.14	5.152	2.643	0.42215
2/21/2007 13:38:17	49097.0	11.0	5.1	5.105	2.596	0.41436
2/21/2007 13:38:17	49097.5	11.5	5.06	5.065	2.556	0.40762
2/21/2007 13:38:18	49098.0	12.0	5.01	5.020	2.511	0.39990
2/21/2007 13:38:18	49098.5	12.5	4.97	4.980	2.471	0.39293
2/21/2007 13:38:19	49099.0	13.0	4.93	4.940	2.431	0.38585
2/21/2007 13:38:19	49099.5	13.5	4.89	4.900	2.391	0.37864
2/21/2007 13:38:20	49100.0	14.0	4.86	4.864	2.355	0.37206
2/21/2007 13:38:20	49100.5	14.5	4.82	4.826	2.317	0.36499
2/21/2007 13:38:21	49101.0	15.0	4.78	4.791	2.282	0.35838
2/21/2007 13:38:21	49101.5	15.5	4.75	4.755	2.246	0.35148
2/21/2007 13:38:22	49102.0	16.0	4.71	4.720	2.211	0.34466
2/21/2007 13:38:22	49102.5	16.5	4.68	4.687	2.178	0.33813
2/21/2007 13:38:23	49103.0	17.0	4.65	4.654	2.145	0.33150
2/21/2007 13:38:23	49103.5	17.5	4.61	4.620	2.111	0.32457
2/21/2007 13:38:24	49104.0	18.0	4.58	4.590	2.081	0.31835
2/21/2007 13:38:24	49104.5	18.5	4.55	4.559	2.050	0.31184
2/21/2007 13:38:25	49105.0	19.0	4.52	4.528	2.019	0.30522
2/21/2007 13:38:25	49105.5	19.5	4.49	4.499	1.990	0.29894
2/21/2007 13:38:26	49106.0	20.0	4.46	4.469	1.960	0.29235
2/21/2007 13:38:26	49106.5	20.5	4.44	4.443	1.934	0.28655
2/21/2007 13:38:27	49107.0	21.0	4.41	4.414	1.905	0.27999
2/21/2007 13:38:27	49107.5	21.5	4.38	4.385	1.876	0.27333

Slug Test P3-11S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:38:28	49108.0	22.0	4.35	4.362	1.853	0.26798
2/21/2007 13:38:28	49108.5	22.5	4.33	4.333	1.824	0.26113
2/21/2007 13:38:29	49109.0	23.0	4.3	4.307	1.798	0.25490
2/21/2007 13:38:29	49109.5	23.5	4.28	4.283	1.774	0.24906
2/21/2007 13:38:30	49110.0	24.0	4.25	4.259	1.750	0.24315
2/21/2007 13:38:30	49110.5	24.5	4.23	4.233	1.724	0.23665
2/21/2007 13:38:31	49111.0	25.0	4.2	4.209	1.700	0.23057
2/21/2007 13:38:31	49111.5	25.5	4.18	4.185	1.676	0.22439
2/21/2007 13:38:32	49112.0	26.0	4.16	4.164	1.655	0.21892
2/21/2007 13:38:32	49112.5	26.5	4.13	4.137	1.628	0.21178
2/21/2007 13:38:33	49113.0	27.0	4.11	4.118	1.609	0.20668
2/21/2007 13:38:33	49113.5	27.5	4.09	4.097	1.588	0.20098
2/21/2007 13:38:34	49114.0	28.0	4.07	4.074	1.564	0.19437
2/21/2007 13:38:34	49114.5	28.5	4.04	4.052	1.542	0.18822
2/21/2007 13:38:35	49115.0	29.0	4.02	4.033	1.523	0.18284
2/21/2007 13:38:35	49115.5	29.5	4	4.012	1.502	0.17681
2/21/2007 13:38:36	49116.0	30.0	3.98	3.992	1.483	0.17100
2/21/2007 13:38:36	49116.5	30.5	3.96	3.973	1.464	0.16540
2/21/2007 13:38:37	49117.0	31.0	3.95	3.954	1.445	0.15972
2/21/2007 13:38:37	49117.5	31.5	3.93	3.935	1.426	0.15397
2/21/2007 13:38:38	49118.0	32.0	3.91	3.918	1.409	0.14876
2/21/2007 13:38:38	49118.5	32.5	3.89	3.896	1.387	0.14193
2/21/2007 13:38:39	49119.0	33.0	3.87	3.877	1.368	0.13594
2/21/2007 13:38:39	49119.5	33.5	3.85	3.860	1.351	0.13051
2/21/2007 13:38:40	49120.0	34.0	3.83	3.841	1.332	0.12435
2/21/2007 13:38:40	49120.5	34.5	3.82	3.824	1.315	0.11878
2/21/2007 13:38:41	49121.0	35.0	3.8	3.805	1.296	0.11245
2/21/2007 13:38:41	49121.5	35.5	3.78	3.790	1.281	0.10740
2/21/2007 13:38:42	49122.0	36.0	3.77	3.774	1.265	0.10194
2/21/2007 13:38:42	49122.5	36.5	3.75	3.757	1.248	0.09606
2/21/2007 13:38:43	49123.5	37.5	3.72	3.728	1.219	0.08585
2/21/2007 13:38:44	49124.0	38.0	3.7	3.711	1.202	0.07975
2/21/2007 13:38:44	49124.5	38.5	3.69	3.696	1.187	0.07430
2/21/2007 13:38:45	49125.0	39.0	3.67	3.682	1.173	0.06915
2/21/2007 13:38:45	49125.5	39.5	3.66	3.667	1.158	0.06356
2/21/2007 13:38:46	49126.0	40.0	3.64	3.653	1.144	0.05827
2/21/2007 13:38:46	49126.5	40.5	3.63	3.638	1.129	0.05254
2/21/2007 13:38:47	49127.0	41.0	3.62	3.624	1.115	0.04712
2/21/2007 13:38:48	49128.0	42.0	3.59	3.597	1.088	0.03648
2/21/2007 13:38:48	49128.5	42.5	3.57	3.583	1.074	0.03085
2/21/2007 13:38:49	49129.5	43.5	3.55	3.558	1.049	0.02062
2/21/2007 13:38:50	49130.0	44.0	3.53	3.542	1.033	0.01395
2/21/2007 13:38:50	49130.5	44.5	3.52	3.529	1.020	0.00845
2/21/2007 13:38:51	49131.0	45.0	3.51	3.517	1.008	0.00331
2/21/2007 13:38:52	49132.0	46.0	3.48	3.493	0.984	-0.00716
2/21/2007 13:38:52	49132.5	46.5	3.47	3.481	0.972	-0.01249
2/21/2007 13:38:53	49133.5	47.5	3.45	3.456	0.947	-0.02380
2/21/2007 13:38:54	49134.5	48.5	3.43	3.434	0.925	-0.03401
2/21/2007 13:38:55	49135.5	49.5	3.4	3.413	0.904	-0.04398

Slug Test P3-11S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:38:56	49136.5	50.5	3.38	3.391	0.882	-0.05468
2/21/2007 13:38:57	49137.5	51.5	3.36	3.366	0.857	-0.06717
2/21/2007 13:38:58	49138.5	52.5	3.34	3.347	0.838	-0.07690
2/21/2007 13:38:59	49139.5	53.5	3.32	3.330	0.821	-0.08580
2/21/2007 13:39:00	49140.0	54.0	3.31	3.318	0.809	-0.09220
2/21/2007 13:39:01	49141.0	55.0	3.29	3.300	0.791	-0.10197
2/21/2007 13:39:02	49142.0	56.0	3.27	3.283	0.774	-0.11140
2/21/2007 13:39:02	49142.5	56.5	3.26	3.273	0.764	-0.11705
2/21/2007 13:39:03	49143.5	57.5	3.25	3.256	0.747	-0.12682
2/21/2007 13:39:04	49144.0	58.0	3.24	3.247	0.738	-0.13208
2/21/2007 13:39:04	49144.5	58.5	3.23	3.237	0.728	-0.13801
2/21/2007 13:39:05	49145.5	59.5	3.21	3.222	0.713	-0.14704
2/21/2007 13:39:06	49146.0	60.0	3.2	3.212	0.703	-0.15318
2/21/2007 13:39:07	49147.0	61.0	3.19	3.197	0.688	-0.16254
2/21/2007 13:39:08	49148.0	62.0	3.17	3.180	0.671	-0.17340
2/21/2007 13:39:09	49149.0	63.0	3.16	3.166	0.657	-0.18256
2/21/2007 13:39:09	49149.5	63.5	3.15	3.158	0.649	-0.18788
2/21/2007 13:39:10	49150.5	64.5	3.13	3.143	0.634	-0.19803
2/21/2007 13:39:11	49151.5	65.5	3.12	3.129	0.620	-0.20772
2/21/2007 13:39:12	49152.0	66.0	3.11	3.121	0.612	-0.21336
2/21/2007 13:39:13	49153.0	67.0	3.1	3.109	0.600	-0.22196
2/21/2007 13:39:13	49153.5	67.5	3.09	3.102	0.593	-0.22705
2/21/2007 13:39:14	49154.0	68.0	3.09	3.094	0.585	-0.23295
2/21/2007 13:39:15	49155.0	69.0	3.08	3.084	0.575	-0.24043
2/21/2007 13:39:15	49155.5	69.5	3.07	3.077	0.568	-0.24575
2/21/2007 13:39:16	49156.5	70.5	3.06	3.064	0.555	-0.25580
2/21/2007 13:39:17	49157.0	71.0	3.05	3.057	0.548	-0.26131
2/21/2007 13:39:18	49158.0	72.0	3.04	3.045	0.536	-0.27092
2/21/2007 13:39:19	49159.0	73.0	3.02	3.032	0.523	-0.28158
2/21/2007 13:39:20	49160.0	74.0	3.01	3.022	0.513	-0.28995
2/21/2007 13:39:20	49160.5	74.5	3.01	3.015	0.506	-0.29592
2/21/2007 13:39:21	49161.5	75.5	3	3.005	0.496	-0.30458
2/21/2007 13:39:22	49162.5	76.5	2.99	2.995	0.486	-0.31342
2/21/2007 13:39:23	49163.5	77.5	2.98	2.985	0.476	-0.32244
2/21/2007 13:39:24	49164.5	78.5	2.97	2.975	0.466	-0.33165
2/21/2007 13:39:25	49165.5	79.5	2.95	2.963	0.454	-0.34297
2/21/2007 13:39:26	49166.5	80.5	2.95	2.956	0.447	-0.34971
2/21/2007 13:39:27	49167.0	81.0	2.94	2.948	0.439	-0.35755
2/21/2007 13:39:28	49168.0	82.0	2.93	2.938	0.429	-0.36755
2/21/2007 13:39:29	49169.0	83.0	2.92	2.928	0.419	-0.37778
2/21/2007 13:39:30	49170.0	84.0	2.91	2.923	0.414	-0.38299
2/21/2007 13:39:31	49171.0	85.0	2.9	2.913	0.404	-0.39360
2/21/2007 13:39:32	49172.0	86.0	2.9	2.906	0.397	-0.40118
2/21/2007 13:39:33	49173.0	87.0	2.89	2.898	0.389	-0.41001
2/21/2007 13:39:33	49173.5	87.5	2.88	2.893	0.384	-0.41562
2/21/2007 13:39:34	49174.5	88.5	2.88	2.886	0.377	-0.42360
2/21/2007 13:39:35	49175.5	89.5	2.87	2.878	0.369	-0.43290
2/21/2007 13:39:36	49176.5	90.5	2.86	2.871	0.362	-0.44121
2/21/2007 13:39:37	49177.5	91.5	2.85	2.863	0.354	-0.45090

Slug Test P3-11S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:39:38	49178.5	92.5	2.85	2.856	0.347	-0.45956
2/21/2007 13:39:39	49179.5	93.5	2.84	2.851	0.342	-0.46585
2/21/2007 13:39:40	49180.0	94.0	2.83	2.843	0.334	-0.47612
2/21/2007 13:39:41	49181.0	95.0	2.83	2.838	0.329	-0.48265
2/21/2007 13:39:42	49182.0	96.0	2.82	2.833	0.324	-0.48929
2/21/2007 13:39:42	49182.5	96.5	2.82	2.828	0.319	-0.49603
2/21/2007 13:39:43	49183.5	97.5	2.81	2.823	0.314	-0.50288
2/21/2007 13:39:44	49184.5	98.5	2.81	2.816	0.307	-0.51265
2/21/2007 13:39:46	49186.0	100.0	2.8	2.811	0.302	-0.51976
2/21/2007 13:39:47	49187.0	101.0	2.79	2.803	0.294	-0.53140
2/21/2007 13:39:47	49187.5	101.5	2.79	2.798	0.289	-0.53884
2/21/2007 13:39:49	49189.0	103.0	2.78	2.793	0.284	-0.54639
2/21/2007 13:39:50	49190.0	104.0	2.78	2.786	0.277	-0.55721
2/21/2007 13:39:50	49190.5	104.5	2.77	2.781	0.272	-0.56511
2/21/2007 13:39:51	49191.5	105.5	2.77	2.776	0.267	-0.57314
2/21/2007 13:39:52	49192.5	106.5	2.76	2.771	0.262	-0.58133
2/21/2007 13:39:53	49193.5	107.5	2.76	2.766	0.257	-0.58968
2/21/2007 13:39:54	49194.0	108.0	2.75	2.763	0.254	-0.59476
2/21/2007 13:39:55	49195.0	109.0	2.75	2.758	0.249	-0.60337
2/21/2007 13:39:56	49196.0	110.0	2.74	2.753	0.244	-0.61216
2/21/2007 13:39:56	49196.5	110.5	2.74	2.750	0.241	-0.61752
2/21/2007 13:39:57	49197.5	111.5	2.74	2.746	0.237	-0.62476
2/21/2007 13:39:58	49198.5	112.5	2.73	2.740	0.231	-0.63587
2/21/2007 13:40:00	49200.0	114.0	2.73	2.735	0.226	-0.64533
2/21/2007 13:40:01	49201.5	115.5	2.72	2.730	0.221	-0.65501
2/21/2007 13:40:02	49202.5	116.5	2.72	2.725	0.216	-0.66491
2/21/2007 13:40:03	49203.5	117.5	2.71	2.720	0.211	-0.67505
2/21/2007 13:40:05	49205.0	119.0	2.71	2.715	0.206	-0.68542
2/21/2007 13:40:06	49206.0	120.0	2.7	2.710	0.201	-0.69605
2/21/2007 13:40:07	49207.5	121.5	2.7	2.705	0.196	-0.70694
2/21/2007 13:40:08	49208.5	122.5	2.69	2.700	0.191	-0.71812
2/21/2007 13:40:10	49210.0	124.0	2.69	2.695	0.186	-0.72959
2/21/2007 13:40:11	49211.5	125.5	2.68	2.690	0.181	-0.74136
2/21/2007 13:40:13	49213.0	127.0	2.68	2.685	0.176	-0.75347
2/21/2007 13:40:14	49214.5	128.5	2.67	2.682	0.173	-0.76088
2/21/2007 13:40:15	49215.0	129.0	2.67	2.680	0.171	-0.76590
2/21/2007 13:40:15	49215.5	129.5	2.67	2.677	0.168	-0.77356
2/21/2007 13:40:16	49216.0	130.0	2.67	2.675	0.166	-0.77874
2/21/2007 13:40:18	49218.0	132.0	2.66	2.672	0.163	-0.78658
2/21/2007 13:40:19	49219.0	133.0	2.66	2.670	0.161	-0.79191
2/21/2007 13:40:19	49219.5	133.5	2.66	2.667	0.158	-0.80004
2/21/2007 13:40:20	49220.5	134.5	2.66	2.666	0.156	-0.80553
2/21/2007 13:40:21	49221.0	135.0	2.65	2.663	0.153	-0.81392
2/21/2007 13:40:22	49222.5	136.5	2.65	2.661	0.152	-0.81958
2/21/2007 13:40:23	49223.5	137.5	2.65	2.658	0.149	-0.82824
2/21/2007 13:40:24	49224.5	138.5	2.65	2.655	0.146	-0.83707
2/21/2007 13:40:26	49226.0	140.0	2.64	2.650	0.141	-0.85221
2/21/2007 13:40:28	49228.0	142.0	2.64	2.645	0.136	-0.86788
2/21/2007 13:40:28	49228.5	142.5	2.64	2.648	0.139	-0.85836

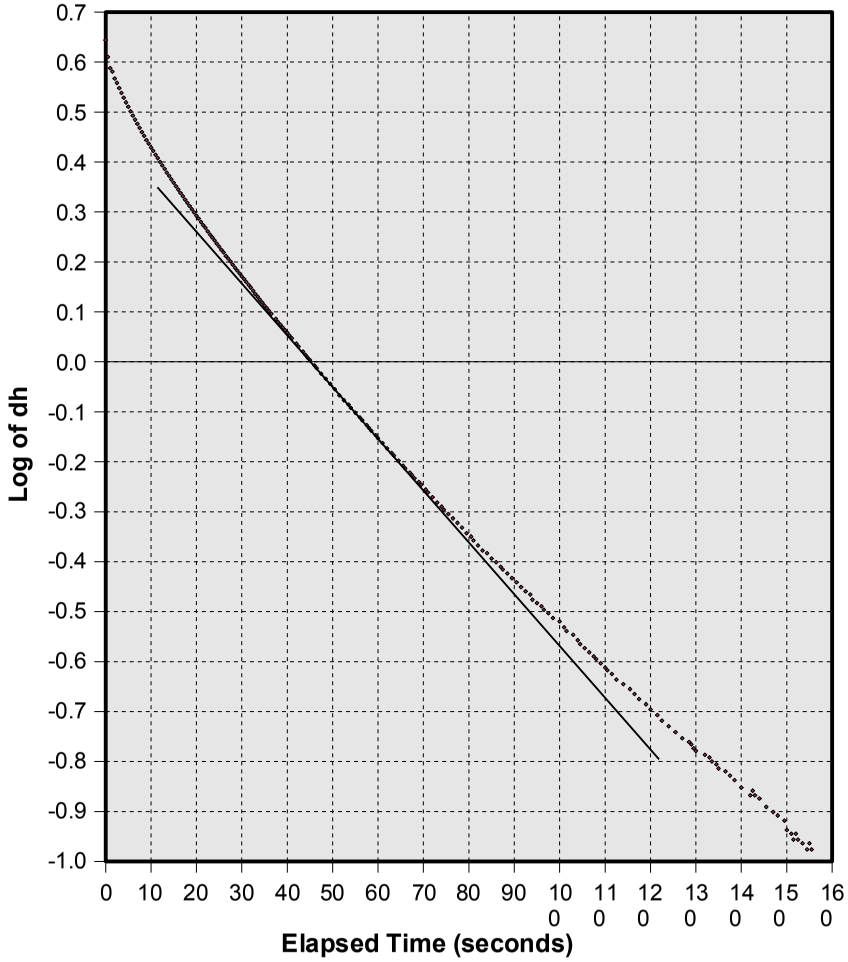
Slug Test P3-11S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:40:29	49229.0	143.0	2.64	2.645	0.136	-0.86785
2/21/2007 13:40:30	49230.0	144.0	2.63	2.643	0.134	-0.87428
2/21/2007 13:40:31	49231.5	145.5	2.63	2.638	0.129	-0.89080
2/21/2007 13:40:33	49233.0	147.0	2.63	2.635	0.126	-0.90100
2/21/2007 13:40:34	49234.0	148.0	2.62	2.633	0.124	-0.90794
2/21/2007 13:40:35	49235.5	149.5	2.62	2.630	0.121	-0.91856
2/21/2007 13:40:36	49236.0	150.0	2.62	2.625	0.116	-0.93693
2/21/2007 13:40:37	49237.0	151.0	2.61	2.623	0.114	-0.94447
2/21/2007 13:40:37	49237.5	151.5	2.61	2.620	0.111	-0.95607
2/21/2007 13:40:38	49238.0	152.0	2.61	2.623	0.114	-0.94443
2/21/2007 13:40:38	49238.5	152.5	2.61	2.620	0.111	-0.95603
2/21/2007 13:40:39	49239.5	153.5	2.61	2.618	0.109	-0.96392
2/21/2007 13:40:40	49240.5	154.5	2.61	2.615	0.106	-0.97604
2/21/2007 13:40:41	49241.0	155.0	2.61	2.618	0.109	-0.96386
2/21/2007 13:40:41	49241.5	155.5	2.61	2.615	0.106	-0.97600

Slug Test P3-11S

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	17.03	ft
Stick up height:	3.20	ft
Depth to sand pack (BGS):	6.00	ft
Depth to screened interval (BGS):	7.03	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	4.74	ft
Initial Head Change:	4.40	ft
Total well length:	20.23	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.37	ft
Drawdown at time = t (y_t):	0.45	ft
Elapsed Time between y_0 and y_t (t):	47	sec
Initial water column in well (L_w):	15.49	ft
$\ln(R_e/r_w)$ =	2.18	
K =	1.79E-05	ft/sec
	5.47E-04	**cm/sec**
	565.65	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-11D

Initial offset in logger reading (feet):	-0.026	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	-0.000001		
Initial depth to water table (feet):	4.92		
Depth of probe below water table (feet):	5.557		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 13:57:09	50229.5	0.0	10.14	10.164	4.607	0.66345
2/21/2007 13:57:10	50230.0	0.5	10.03	10.058	4.501	0.65334
2/21/2007 13:57:14	50234.0	4.5	9.93	9.953	4.396	0.64309
2/21/2007 13:57:17	50237.5	8.0	9.83	9.852	4.295	0.63299
2/21/2007 13:57:21	50241.5	12.0	9.72	9.745	4.188	0.62204
2/21/2007 13:57:25	50245.5	16.0	9.61	9.639	4.082	0.61091
2/21/2007 13:57:29	50249.5	20.0	9.51	9.539	3.982	0.60014
2/21/2007 13:57:33	50253.5	24.0	9.42	9.443	3.886	0.58954
2/21/2007 13:57:37	50257.5	28.0	9.32	9.349	3.792	0.57890
2/21/2007 13:57:41	50261.5	32.0	9.23	9.260	3.703	0.56859
2/21/2007 13:57:45	50265.5	36.0	9.15	9.171	3.614	0.55803
2/21/2007 13:57:49	50269.5	40.0	9.06	9.082	3.525	0.54720
2/21/2007 13:57:53	50273.5	44.0	8.97	9.000	3.443	0.53698
2/21/2007 13:57:57	50277.5	48.0	8.9	8.921	3.364	0.52690
2/21/2007 13:58:01	50281.5	52.0	8.81	8.839	3.282	0.51618
2/21/2007 13:58:05	50285.5	56.0	8.74	8.762	3.205	0.50587
2/21/2007 13:58:09	50289.5	60.0	8.66	8.684	3.127	0.49517
2/21/2007 13:58:13	50293.5	64.0	8.59	8.612	3.055	0.48506
2/21/2007 13:58:18	50298.0	68.5	8.51	8.532	2.975	0.47354
2/21/2007 13:58:22	50302.5	73.0	8.43	8.455	2.898	0.46215
2/21/2007 13:58:27	50307.0	77.5	8.35	8.378	2.821	0.45046
2/21/2007 13:58:31	50311.0	81.5	8.29	8.313	2.756	0.44033
2/21/2007 13:58:35	50315.0	85.5	8.22	8.245	2.688	0.42949
2/21/2007 13:58:40	50320.0	90.5	8.15	8.177	2.620	0.41836
2/21/2007 13:58:44	50324.0	94.5	8.09	8.116	2.559	0.40813
2/21/2007 13:58:48	50328.5	99.0	8.03	8.056	2.499	0.39783
2/21/2007 13:58:53	50333.0	103.5	7.96	7.990	2.433	0.38621
2/21/2007 13:58:57	50337.0	107.5	7.91	7.932	2.375	0.37573
2/21/2007 13:59:01	50341.5	112.0	7.85	7.871	2.314	0.36443
2/21/2007 13:59:06	50346.0	116.5	7.79	7.813	2.256	0.35341
2/21/2007 13:59:10	50350.5	121.0	7.73	7.757	2.200	0.34250
2/21/2007 13:59:14	50354.5	125.0	7.68	7.706	2.149	0.33231
2/21/2007 13:59:18	50358.5	129.0	7.63	7.652	2.095	0.32126
2/21/2007 13:59:22	50362.5	133.0	7.58	7.603	2.046	0.31099
2/21/2007 13:59:27	50367.0	137.5	7.53	7.552	1.995	0.30003
2/21/2007 13:59:31	50371.5	142.0	7.48	7.503	1.946	0.28923
2/21/2007 13:59:35	50375.5	146.0	7.43	7.456	1.899	0.27861
2/21/2007 13:59:40	50380.0	150.5	7.38	7.407	1.850	0.26726
2/21/2007 13:59:44	50384.5	155.0	7.33	7.360	1.803	0.25609
2/21/2007 13:59:48	50388.5	159.0	7.29	7.318	1.761	0.24586
2/21/2007 13:59:52	50392.5	163.0	7.25	7.276	1.719	0.23538
2/21/2007 13:59:56	50396.5	167.0	7.21	7.236	1.679	0.22515
2/21/2007 14:00:00	50400.5	171.0	7.17	7.196	1.639	0.21469
2/21/2007 14:00:05	50405.0	175.5	7.13	7.156	1.599	0.20396

Slug Test P3-11D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:00:08	50408.5	179.0	7.09	7.119	1.562	0.19379
2/21/2007 14:00:12	50412.5	183.0	7.06	7.082	1.525	0.18339
2/21/2007 14:00:16	50416.5	187.0	7.02	7.046	1.489	0.17302
2/21/2007 14:00:21	50421.0	191.5	6.99	7.011	1.454	0.16269
2/21/2007 14:00:25	50425.0	195.5	6.95	6.976	1.419	0.15211
2/21/2007 14:00:29	50429.0	199.5	6.92	6.943	1.386	0.14190
2/21/2007 14:00:33	50433.0	203.5	6.88	6.908	1.351	0.13079
2/21/2007 14:00:37	50437.0	207.5	6.85	6.875	1.318	0.12006
2/21/2007 14:00:41	50441.5	212.0	6.82	6.841	1.284	0.10871
2/21/2007 14:00:46	50446.0	216.5	6.78	6.808	1.251	0.09741
2/21/2007 14:00:50	50450.0	220.5	6.75	6.777	1.220	0.08651
2/21/2007 14:00:53	50453.5	224.0	6.72	6.749	1.192	0.07644
2/21/2007 14:00:57	50457.5	228.0	6.7	6.721	1.164	0.06612
2/21/2007 14:01:01	50461.5	232.0	6.67	6.693	1.136	0.05555
2/21/2007 14:01:05	50465.5	236.0	6.64	6.667	1.110	0.04550
2/21/2007 14:01:09	50469.5	240.0	6.62	6.641	1.084	0.03521
2/21/2007 14:01:13	50473.5	244.0	6.59	6.616	1.059	0.02508
2/21/2007 14:01:17	50477.0	247.5	6.56	6.590	1.033	0.01429
2/21/2007 14:01:21	50481.0	251.5	6.54	6.566	1.009	0.00409
2/21/2007 14:01:24	50484.5	255.0	6.52	6.543	0.986	-0.00592
2/21/2007 14:01:28	50488.5	259.0	6.49	6.519	0.962	-0.01662
2/21/2007 14:01:32	50492.5	263.0	6.47	6.494	0.937	-0.02805
2/21/2007 14:01:36	50496.5	267.0	6.45	6.472	0.915	-0.03836
2/21/2007 14:01:40	50500.0	270.5	6.43	6.451	0.894	-0.04844
2/21/2007 14:01:44	50504.0	274.5	6.4	6.428	0.871	-0.05975
2/21/2007 14:01:48	50508.5	279.0	6.38	6.407	0.850	-0.07034
2/21/2007 14:01:52	50512.5	283.0	6.36	6.386	0.829	-0.08120
2/21/2007 14:01:55	50515.5	286.0	6.34	6.367	0.810	-0.09126
2/21/2007 14:01:59	50519.0	289.5	6.32	6.348	0.791	-0.10156
2/21/2007 14:02:03	50523.0	293.5	6.3	6.329	0.772	-0.11211
2/21/2007 14:02:07	50527.0	297.5	6.28	6.310	0.753	-0.12293
2/21/2007 14:02:10	50530.5	301.0	6.26	6.289	0.732	-0.13520
2/21/2007 14:02:14	50534.5	305.0	6.24	6.270	0.713	-0.14661
2/21/2007 14:02:18	50538.5	309.0	6.23	6.252	0.695	-0.15771
2/21/2007 14:02:22	50542.5	313.0	6.21	6.235	0.678	-0.16846
2/21/2007 14:02:26	50546.0	316.5	6.19	6.219	0.662	-0.17882
2/21/2007 14:02:30	50550.0	320.5	6.18	6.202	0.645	-0.19011
2/21/2007 14:02:33	50553.5	324.0	6.16	6.186	0.629	-0.20101
2/21/2007 14:02:37	50557.0	327.5	6.14	6.169	0.613	-0.21289
2/21/2007 14:02:40	50560.5	331.0	6.13	6.155	0.599	-0.22293
2/21/2007 14:02:44	50564.5	335.0	6.12	6.141	0.585	-0.23321
2/21/2007 14:02:48	50568.0	338.5	6.1	6.125	0.569	-0.24526
2/21/2007 14:02:52	50572.0	342.5	6.09	6.111	0.555	-0.25609
2/21/2007 14:02:55	50575.0	345.5	6.07	6.097	0.541	-0.26719
2/21/2007 14:02:59	50579.0	349.5	6.06	6.083	0.527	-0.27859
2/21/2007 14:03:02	50582.5	353.0	6.05	6.071	0.515	-0.28860
2/21/2007 14:03:06	50586.0	356.5	6.03	6.057	0.501	-0.30058
2/21/2007 14:03:10	50590.0	360.5	6.02	6.045	0.489	-0.31112
2/21/2007 14:03:13	50593.0	363.5	6.01	6.033	0.477	-0.32192

Slug Test P3-11D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:03:16	50596.5	367.0	6	6.021	0.465	-0.33299
2/21/2007 14:03:20	50600.0	370.5	5.98	6.007	0.451	-0.34628
2/21/2007 14:03:24	50604.0	374.5	5.97	5.995	0.439	-0.35800
2/21/2007 14:03:27	50607.5	378.0	5.96	5.984	0.428	-0.36903
2/21/2007 14:03:31	50611.0	381.5	5.95	5.972	0.416	-0.38139
2/21/2007 14:03:33	50613.5	384.0	5.94	5.962	0.406	-0.39197
2/21/2007 14:03:37	50617.0	387.5	5.93	5.951	0.395	-0.40391
2/21/2007 14:03:40	50620.5	391.0	5.92	5.941	0.385	-0.41506
2/21/2007 14:03:43	50623.0	393.5	5.91	5.932	0.376	-0.42534
2/21/2007 14:03:45	50625.5	396.0	5.9	5.922	0.366	-0.43706
2/21/2007 14:03:49	50629.0	399.5	5.89	5.913	0.357	-0.44788
2/21/2007 14:03:52	50632.5	403.0	5.88	5.903	0.347	-0.46024
2/21/2007 14:03:56	50636.0	406.5	5.87	5.894	0.338	-0.47166
2/21/2007 14:03:59	50639.5	410.0	5.86	5.885	0.329	-0.48340
2/21/2007 14:04:03	50643.0	413.5	5.85	5.875	0.319	-0.49682
2/21/2007 14:04:06	50646.5	417.0	5.84	5.866	0.310	-0.50926
2/21/2007 14:04:09	50649.0	419.5	5.83	5.856	0.300	-0.52352
2/21/2007 14:04:11	50651.5	422.0	5.82	5.849	0.293	-0.53379
2/21/2007 14:04:13	50653.5	424.0	5.82	5.842	0.286	-0.54430
2/21/2007 14:04:16	50656.0	426.5	5.81	5.835	0.279	-0.55508
2/21/2007 14:04:20	50660.0	430.5	5.8	5.828	0.272	-0.56613
2/21/2007 14:04:23	50663.0	433.5	5.8	5.821	0.265	-0.57746
2/21/2007 14:04:25	50665.0	435.5	5.79	5.814	0.258	-0.58911
2/21/2007 14:04:29	50669.0	439.5	5.78	5.807	0.251	-0.60107
2/21/2007 14:04:32	50672.0	442.5	5.77	5.800	0.244	-0.61337
2/21/2007 14:04:35	50675.0	445.5	5.77	5.793	0.237	-0.62603
2/21/2007 14:04:37	50677.5	448.0	5.76	5.786	0.230	-0.63907
2/21/2007 14:04:40	50680.5	451.0	5.75	5.776	0.220	-0.65841
2/21/2007 14:04:42	50682.0	452.5	5.75	5.771	0.215	-0.66841
2/21/2007 14:04:45	50685.0	455.5	5.74	5.764	0.208	-0.68281
2/21/2007 14:04:48	50688.5	459.0	5.73	5.757	0.201	-0.69771
2/21/2007 14:04:52	50692.0	462.5	5.72	5.750	0.194	-0.71313
2/21/2007 14:04:55	50695.0	465.5	5.72	5.743	0.187	-0.72912
2/21/2007 14:04:58	50698.5	469.0	5.71	5.738	0.182	-0.74091
2/21/2007 14:05:01	50701.5	472.0	5.71	5.731	0.175	-0.75798
2/21/2007 14:05:04	50704.0	474.5	5.7	5.727	0.171	-0.76804
2/21/2007 14:05:06	50706.5	477.0	5.7	5.722	0.166	-0.78096
2/21/2007 14:05:09	50709.5	480.0	5.69	5.717	0.161	-0.79427
2/21/2007 14:05:11	50711.5	482.0	5.69	5.713	0.157	-0.80522
2/21/2007 14:05:14	50714.0	484.5	5.68	5.708	0.152	-0.81931
2/21/2007 14:05:16	50716.5	487.0	5.68	5.701	0.145	-0.83983
2/21/2007 14:05:20	50720.0	490.5	5.67	5.696	0.140	-0.85511
2/21/2007 14:05:22	50722.0	492.5	5.67	5.691	0.135	-0.87094
2/21/2007 14:05:24	50724.5	495.0	5.66	5.687	0.131	-0.88404
2/21/2007 14:05:25	50725.5	496.0	5.66	5.684	0.128	-0.89413
2/21/2007 14:05:27	50727.5	498.0	5.65	5.680	0.124	-0.90796
2/21/2007 14:05:30	50730.5	501.0	5.65	5.677	0.121	-0.91862
2/21/2007 14:05:31	50731.0	501.5	5.65	5.672	0.116	-0.93701
2/21/2007 14:05:32	50732.0	502.5	5.65	5.675	0.119	-0.92588

Slug Test P3-11D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:05:32	50732.5	503.0	5.65	5.672	0.116	-0.93701
2/21/2007 14:05:33	50733.5	504.0	5.64	5.668	0.112	-0.95230
2/21/2007 14:05:35	50735.0	505.5	5.64	5.665	0.109	-0.96413
2/21/2007 14:05:35	50735.5	506.0	5.64	5.668	0.112	-0.95229
2/21/2007 14:05:37	50737.0	507.5	5.64	5.665	0.109	-0.96412
2/21/2007 14:05:39	50739.0	509.5	5.64	5.661	0.105	-0.98041
2/21/2007 14:05:39	50739.5	510.0	5.63	5.658	0.102	-0.99305
2/21/2007 14:05:41	50741.5	512.0	5.63	5.653	0.097	-1.01495
2/21/2007 14:05:43	50743.0	513.5	5.63	5.656	0.100	-1.00167
2/21/2007 14:05:44	50744.0	514.5	5.63	5.653	0.097	-1.01495
2/21/2007 14:05:46	50746.0	516.5	5.62	5.649	0.093	-1.03330
2/21/2007 14:05:46	50746.5	517.0	5.62	5.646	0.090	-1.04760
2/21/2007 14:05:48	50748.0	518.5	5.62	5.642	0.086	-1.06743
2/21/2007 14:05:49	50749.5	520.0	5.61	5.639	0.083	-1.08291
2/21/2007 14:05:51	50751.5	522.0	5.61	5.637	0.081	-1.09355
2/21/2007 14:05:52	50752.5	523.0	5.61	5.639	0.083	-1.08290
2/21/2007 14:05:53	50753.0	523.5	5.61	5.637	0.081	-1.09354
2/21/2007 14:05:54	50754.5	525.0	5.61	5.632	0.076	-1.12134
2/21/2007 14:05:56	50756.0	526.5	5.6	5.630	0.074	-1.13298
2/21/2007 14:05:57	50757.0	527.5	5.61	5.632	0.076	-1.12134
2/21/2007 14:05:57	50757.5	528.0	5.6	5.630	0.074	-1.13297
2/21/2007 14:05:59	50759.0	529.5	5.6	5.627	0.071	-1.15103
2/21/2007 14:06:00	50760.5	531.0	5.6	5.625	0.069	-1.16350
2/21/2007 14:06:01	50761.5	532.0	5.6	5.623	0.067	-1.17635
2/21/2007 14:06:04	50764.0	534.5	5.59	5.620	0.064	-1.19634
2/21/2007 14:06:05	50765.5	536.0	5.59	5.618	0.062	-1.21021
2/21/2007 14:06:06	50766.5	537.0	5.59	5.615	0.059	-1.23187
2/21/2007 14:06:08	50768.0	538.5	5.59	5.613	0.057	-1.24694
2/21/2007 14:06:08	50768.5	539.0	5.59	5.611	0.055	-1.26255
2/21/2007 14:06:10	50770.5	541.0	5.58	5.608	0.052	-1.28707
2/21/2007 14:06:11	50771.0	541.5	5.59	5.611	0.055	-1.26254
2/21/2007 14:06:11	50771.5	542.0	5.58	5.608	0.052	-1.28707
2/21/2007 14:06:12	50772.0	542.5	5.58	5.606	0.050	-1.30422
2/21/2007 14:06:12	50772.5	543.0	5.58	5.608	0.052	-1.28706
2/21/2007 14:06:13	50773.0	543.5	5.58	5.606	0.050	-1.30421
2/21/2007 14:06:14	50774.0	544.5	5.58	5.604	0.048	-1.32207
2/21/2007 14:06:16	50776.0	546.5	5.58	5.601	0.045	-1.35031
2/21/2007 14:06:17	50777.5	548.0	5.57	5.599	0.043	-1.37021
2/21/2007 14:06:20	50780.0	550.5	5.57	5.596	0.040	-1.40188
2/21/2007 14:06:20	50780.5	551.0	5.57	5.594	0.038	-1.42436
2/21/2007 14:06:22	50782.5	553.0	5.57	5.592	0.036	-1.44805
2/21/2007 14:06:23	50783.5	554.0	5.56	5.589	0.033	-1.48623
2/21/2007 14:06:24	50784.0	554.5	5.57	5.592	0.036	-1.44804
2/21/2007 14:06:24	50784.5	555.0	5.56	5.589	0.033	-1.48622
2/21/2007 14:06:26	50786.0	556.5	5.56	5.587	0.031	-1.51367
2/21/2007 14:06:28	50788.0	558.5	5.56	5.584	0.028	-1.55840
2/21/2007 14:06:29	50789.5	560.0	5.56	5.582	0.026	-1.59100
2/21/2007 14:06:31	50791.0	561.5	5.55	5.580	0.024	-1.62624
2/21/2007 14:06:31	50791.5	562.0	5.56	5.582	0.026	-1.59098

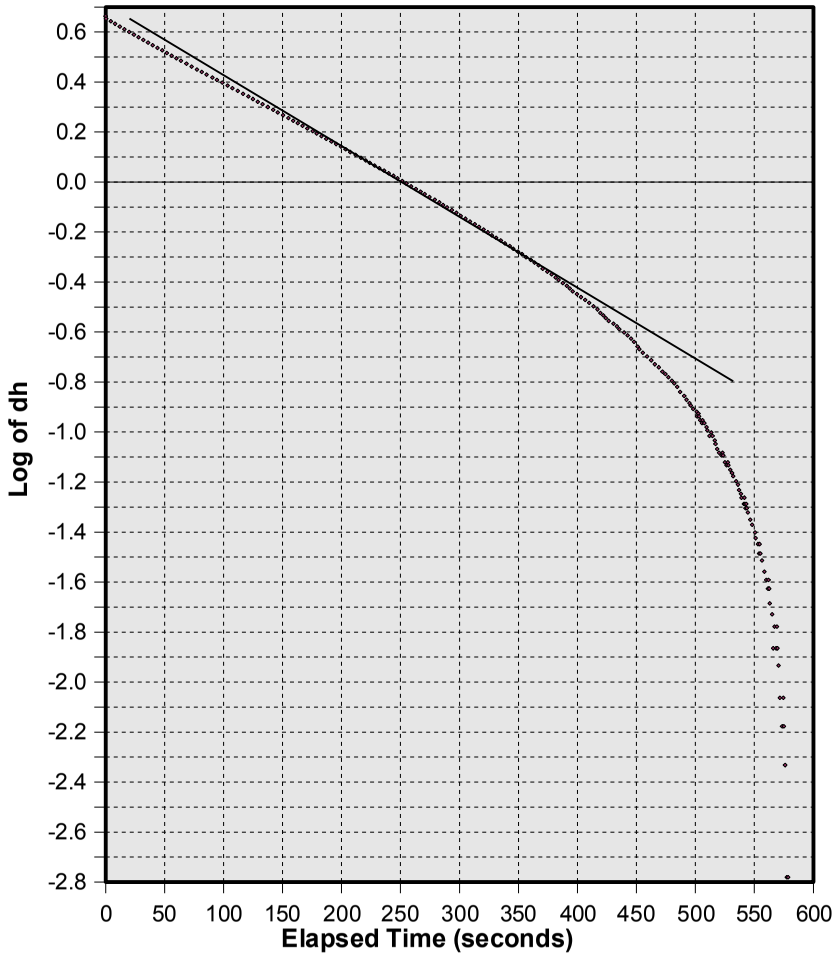
Slug Test P3-11D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:06:32	50792.0	562.5	5.55	5.580	0.024	-1.62623
2/21/2007 14:06:32	50792.5	563.0	5.55	5.577	0.021	-1.68515
2/21/2007 14:06:34	50794.5	565.0	5.55	5.575	0.019	-1.72937
2/21/2007 14:06:35	50795.5	566.0	5.54	5.570	0.014	-1.86491
2/21/2007 14:06:36	50796.5	567.0	5.55	5.573	0.017	-1.77860
2/21/2007 14:06:38	50798.0	568.5	5.54	5.570	0.014	-1.86486
2/21/2007 14:06:38	50798.5	569.0	5.55	5.573	0.017	-1.77857
2/21/2007 14:06:39	50799.0	569.5	5.54	5.570	0.014	-1.86484
2/21/2007 14:06:40	50800.0	570.5	5.54	5.568	0.012	-1.93362
2/21/2007 14:06:41	50801.0	571.5	5.54	5.565	0.009	-2.06288
2/21/2007 14:06:43	50803.0	573.5	5.54	5.563	0.007	-2.17696
2/21/2007 14:06:44	50804.0	574.5	5.54	5.565	0.009	-2.06279
2/21/2007 14:06:44	50804.5	575.0	5.54	5.563	0.007	-2.17690
2/21/2007 14:06:45	50805.5	576.0	5.54	5.561	0.005	-2.33209
2/21/2007 14:06:47	50807.0	577.5	5.53	5.558	0.002	-2.78099
2/21/2007 14:06:48	50808.0	578.5	5.53	5.558	0.002	-2.78083

Slug Test P3-11D

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	38.42	ft
Stick up height:	3.01	ft
Depth to sand pack (BGS):	32.50	ft
Depth to screened interval (BGS):	33.42	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	4.92	ft
Initial Head Change:	4.61	ft
Total well length:	41.43	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	5.00	ft
Length of open section (L_e):	5.00	ft
L_e / r_w:	14.1176	
C (dimensionless):	1.483	
Drawdown at time = 0 (y_0):	2.05	ft
Drawdown at time = t (y_t):	0.39	ft
Elapsed Time between y_0 and y_t (t):	257	sec
Initial water column in well (L_w):	36.51	ft
$\ln(R_e/r_w)$ =	2.92	
K =	1.31E-05	ft/sec
	3.99E-04	**cm/sec**
	412.95	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-12

Initial offset in logger reading (feet):	-0.018	Date:	03/07/2007
Offset increment in logger reading (feet/sec):	0.000050		
Initial depth to water table (feet):	4.14		
Depth of probe below water table (feet):	2.384		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:26:29	51989.5	0.0	7.08	7.086	4.702	0.67225
3/7/2007 14:26:30	51990.5	1.0	6.87	6.873	4.489	0.65211
3/7/2007 14:26:31	51991.5	2.0	6.73	6.729	4.345	0.63795
3/7/2007 14:26:33	51993.0	3.5	6.58	6.577	4.192	0.62247
3/7/2007 14:26:34	51994.5	5.0	6.44	6.441	4.056	0.60814
3/7/2007 14:26:36	51996.0	6.5	6.32	6.320	3.936	0.59509
3/7/2007 14:26:37	51997.5	8.0	6.21	6.208	3.824	0.58255
3/7/2007 14:26:39	51999.0	9.5	6.1	6.102	3.718	0.57033
3/7/2007 14:26:40	52000.5	11.0	6	6.002	3.618	0.55848
3/7/2007 14:26:42	52002.0	12.5	5.91	5.908	3.524	0.54704
3/7/2007 14:26:43	52003.5	14.0	5.82	5.824	3.440	0.53655
3/7/2007 14:26:45	52005.0	15.5	5.74	5.744	3.360	0.52632
3/7/2007 14:26:46	52006.5	17.0	5.67	5.667	3.283	0.51625
3/7/2007 14:26:48	52008.5	19.0	5.57	5.570	3.186	0.50321
3/7/2007 14:26:50	52010.5	21.0	5.48	5.481	3.097	0.49089
3/7/2007 14:26:52	52012.5	23.0	5.4	5.396	3.012	0.47878
3/7/2007 14:26:54	52014.5	25.0	5.32	5.318	2.933	0.46737
3/7/2007 14:26:56	52016.5	27.0	5.24	5.242	2.858	0.45611
3/7/2007 14:26:58	52018.5	29.0	5.17	5.172	2.788	0.44533
3/7/2007 14:27:00	52020.5	31.0	5.1	5.104	2.720	0.43459
3/7/2007 14:27:02	52022.5	33.0	5.04	5.041	2.657	0.42439
3/7/2007 14:27:05	52025.0	35.5	4.97	4.968	2.584	0.41227
3/7/2007 14:27:07	52027.0	37.5	4.91	4.908	2.524	0.40205
3/7/2007 14:27:09	52029.5	40.0	4.84	4.838	2.454	0.38981
3/7/2007 14:27:12	52032.0	42.5	4.78	4.777	2.393	0.37886
3/7/2007 14:27:14	52034.5	45.0	4.71	4.713	2.329	0.36725
3/7/2007 14:27:17	52037.0	47.5	4.66	4.655	2.271	0.35627
3/7/2007 14:27:19	52039.5	50.0	4.6	4.597	2.213	0.34501
3/7/2007 14:27:22	52042.0	52.5	4.54	4.541	2.157	0.33386
3/7/2007 14:27:24	52044.5	55.0	4.49	4.488	2.104	0.32303
3/7/2007 14:27:27	52047.0	57.5	4.44	4.439	2.055	0.31276
3/7/2007 14:27:29	52049.5	60.0	4.39	4.388	2.004	0.30182
3/7/2007 14:27:32	52052.0	62.5	4.34	4.340	1.956	0.29126
3/7/2007 14:27:34	52054.5	65.0	4.3	4.293	1.909	0.28090
3/7/2007 14:27:37	52057.0	67.5	4.25	4.245	1.861	0.26981
3/7/2007 14:27:40	52060.0	70.5	4.2	4.201	1.817	0.25938
3/7/2007 14:27:43	52063.0	73.5	4.16	4.153	1.769	0.24772
3/7/2007 14:27:46	52066.0	76.5	4.11	4.107	1.723	0.23624
3/7/2007 14:27:49	52069.0	79.5	4.07	4.064	1.680	0.22522
3/7/2007 14:27:52	52072.0	82.5	4.02	4.021	1.637	0.21392
3/7/2007 14:27:55	52075.0	85.5	3.98	3.979	1.595	0.20286
3/7/2007 14:27:58	52078.0	88.5	3.94	3.938	1.554	0.19151
3/7/2007 14:28:01	52081.5	92.0	3.9	3.897	1.513	0.17985
3/7/2007 14:28:04	52084.5	95.0	3.86	3.858	1.474	0.16847

Slug Test P3-12

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:28:07	52087.5	98.0	3.82	3.820	1.436	0.15708
3/7/2007 14:28:11	52091.0	101.5	3.79	3.784	1.400	0.14599
3/7/2007 14:28:14	52094.0	104.5	3.76	3.752	1.367	0.13590
3/7/2007 14:28:17	52097.0	107.5	3.72	3.720	1.336	0.12589
3/7/2007 14:28:20	52100.0	110.5	3.69	3.689	1.305	0.11565
3/7/2007 14:28:23	52103.0	113.5	3.66	3.658	1.274	0.10516
3/7/2007 14:28:26	52106.0	116.5	3.63	3.627	1.243	0.09440
3/7/2007 14:28:29	52109.5	120.0	3.6	3.598	1.214	0.08409
3/7/2007 14:28:32	52112.5	123.0	3.57	3.569	1.184	0.07353
3/7/2007 14:28:36	52116.0	126.5	3.54	3.539	1.155	0.06270
3/7/2007 14:28:39	52119.5	130.0	3.51	3.508	1.124	0.05082
3/7/2007 14:28:43	52123.0	133.5	3.48	3.479	1.095	0.03940
3/7/2007 14:28:46	52126.5	137.0	3.46	3.453	1.069	0.02889
3/7/2007 14:28:50	52130.5	141.0	3.43	3.422	1.038	0.01602
3/7/2007 14:28:54	52134.0	144.5	3.4	3.397	1.013	0.00578
3/7/2007 14:28:57	52137.5	148.0	3.38	3.373	0.989	-0.00470
3/7/2007 14:29:01	52141.0	151.5	3.35	3.345	0.961	-0.01725
3/7/2007 14:29:05	52145.0	155.5	3.33	3.323	0.939	-0.02740
3/7/2007 14:29:08	52148.0	158.5	3.31	3.300	0.916	-0.03825
3/7/2007 14:29:12	52152.0	162.5	3.28	3.274	0.889	-0.05086
3/7/2007 14:29:16	52156.5	167.0	3.26	3.249	0.865	-0.06285
3/7/2007 14:29:21	52161.0	171.5	3.23	3.227	0.843	-0.07415
3/7/2007 14:29:25	52165.0	175.5	3.22	3.208	0.824	-0.08416
3/7/2007 14:29:29	52169.0	179.5	3.2	3.189	0.805	-0.09440
3/7/2007 14:29:33	52173.0	183.5	3.18	3.168	0.783	-0.10599
3/7/2007 14:29:37	52177.5	188.0	3.16	3.148	0.764	-0.11678
3/7/2007 14:29:41	52181.5	192.0	3.14	3.129	0.745	-0.12784
3/7/2007 14:29:45	52185.5	196.0	3.12	3.110	0.726	-0.13918
3/7/2007 14:29:50	52190.0	200.5	3.1	3.091	0.707	-0.15083
3/7/2007 14:29:53	52193.5	204.0	3.08	3.072	0.687	-0.16278
3/7/2007 14:29:57	52197.5	208.0	3.06	3.055	0.671	-0.17314
3/7/2007 14:30:03	52203.0	213.5	3.05	3.038	0.654	-0.18447
3/7/2007 14:30:07	52207.0	217.5	3.03	3.022	0.638	-0.19536
3/7/2007 14:30:11	52211.5	222.0	3.01	3.005	0.621	-0.20725
3/7/2007 14:30:14	52214.5	225.0	3	2.990	0.606	-0.21727
3/7/2007 14:30:18	52218.0	228.5	2.99	2.976	0.592	-0.22755
3/7/2007 14:30:23	52223.0	233.5	2.97	2.962	0.578	-0.23813
3/7/2007 14:30:27	52227.0	237.5	2.96	2.948	0.564	-0.24893
3/7/2007 14:30:32	52232.5	243.0	2.94	2.932	0.547	-0.26166
3/7/2007 14:30:36	52236.5	247.0	2.93	2.917	0.533	-0.27307
3/7/2007 14:30:40	52240.5	251.0	2.91	2.903	0.519	-0.28479
3/7/2007 14:30:46	52246.0	256.5	2.9	2.891	0.507	-0.29519
3/7/2007 14:30:50	52250.5	261.0	2.89	2.878	0.494	-0.30667
3/7/2007 14:30:54	52254.5	265.0	2.88	2.865	0.481	-0.31754
3/7/2007 14:30:59	52259.0	269.5	2.87	2.853	0.469	-0.32872
3/7/2007 14:31:04	52264.0	274.5	2.85	2.842	0.458	-0.33926
3/7/2007 14:31:07	52267.5	278.0	2.84	2.830	0.446	-0.35097
3/7/2007 14:31:11	52271.5	282.0	2.83	2.818	0.433	-0.36302
3/7/2007 14:31:17	52277.0	287.5	2.82	2.804	0.420	-0.37653

Slug Test P3-12

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:31:22	52282.0	292.5	2.81	2.794	0.410	-0.38726
3/7/2007 14:31:28	52288.0	298.5	2.79	2.780	0.396	-0.40268
3/7/2007 14:31:33	52293.5	304.0	2.78	2.770	0.386	-0.41298
3/7/2007 14:31:39	52299.5	310.0	2.78	2.761	0.377	-0.42356
3/7/2007 14:31:43	52303.0	313.5	2.77	2.752	0.368	-0.43426
3/7/2007 14:31:54	52314.5	325.0	2.76	2.742	0.358	-0.44572
3/7/2007 14:32:00	52320.5	331.0	2.75	2.733	0.349	-0.45714
3/7/2007 14:32:05	52325.5	336.0	2.74	2.724	0.340	-0.46881
3/7/2007 14:32:10	52330.5	341.0	2.73	2.715	0.331	-0.48080
3/7/2007 14:32:15	52335.0	345.5	2.72	2.704	0.320	-0.49445
3/7/2007 14:32:18	52338.0	348.5	2.71	2.695	0.311	-0.50704
3/7/2007 14:32:22	52342.5	353.0	2.7	2.688	0.304	-0.51724
3/7/2007 14:32:27	52347.0	357.5	2.7	2.681	0.297	-0.52769
3/7/2007 14:32:30	52350.5	361.0	2.69	2.674	0.290	-0.53833
3/7/2007 14:32:35	52355.0	365.5	2.68	2.666	0.282	-0.54930
3/7/2007 14:32:38	52358.5	369.0	2.67	2.657	0.273	-0.56365
3/7/2007 14:32:46	52366.0	376.5	2.67	2.650	0.266	-0.57555
3/7/2007 14:32:50	52370.5	381.0	2.66	2.641	0.257	-0.59089
3/7/2007 14:32:56	52376.5	387.0	2.65	2.633	0.249	-0.60343
3/7/2007 14:32:59	52379.0	389.5	2.64	2.626	0.242	-0.61603
3/7/2007 14:33:06	52386.0	396.5	2.64	2.620	0.236	-0.62758
3/7/2007 14:33:11	52391.5	402.0	2.63	2.613	0.228	-0.64120
3/7/2007 14:33:17	52397.5	408.0	2.62	2.605	0.221	-0.65531
3/7/2007 14:33:18	52398.5	409.0	2.62	2.600	0.216	-0.66534
3/7/2007 14:33:24	52404.5	415.0	2.61	2.594	0.210	-0.67819
3/7/2007 14:33:28	52408.0	418.5	2.61	2.589	0.205	-0.68904
3/7/2007 14:33:31	52411.5	422.0	2.6	2.582	0.197	-0.70454
3/7/2007 14:33:32	52412.5	423.0	2.61	2.586	0.202	-0.69379
3/7/2007 14:33:34	52414.0	424.5	2.6	2.581	0.197	-0.70482
3/7/2007 14:33:34	52414.5	425.0	2.61	2.586	0.202	-0.69401
3/7/2007 14:33:35	52415.5	426.0	2.6	2.581	0.197	-0.70499
3/7/2007 14:33:37	52417.0	427.5	2.59	2.574	0.190	-0.72085
3/7/2007 14:33:44	52424.5	435.0	2.59	2.570	0.186	-0.73096
3/7/2007 14:33:49	52429.5	440.0	2.59	2.566	0.182	-0.74102
3/7/2007 14:33:53	52433.0	443.5	2.58	2.558	0.174	-0.75853
3/7/2007 14:33:57	52437.5	448.0	2.57	2.553	0.169	-0.77175
3/7/2007 14:34:00	52440.5	451.0	2.57	2.549	0.165	-0.78254
3/7/2007 14:34:06	52446.0	456.5	2.57	2.544	0.160	-0.79665
3/7/2007 14:34:12	52452.0	462.5	2.56	2.540	0.155	-0.80851
3/7/2007 14:34:17	52457.0	467.5	2.56	2.534	0.150	-0.82344
3/7/2007 14:34:22	52462.5	473.0	2.55	2.530	0.146	-0.83599
3/7/2007 14:34:27	52467.0	477.5	2.55	2.526	0.142	-0.84875
3/7/2007 14:34:29	52469.5	480.0	2.54	2.521	0.137	-0.86476
3/7/2007 14:34:33	52473.5	484.0	2.54	2.515	0.131	-0.88163
3/7/2007 14:34:43	52483.0	493.5	2.53	2.511	0.127	-0.89669
3/7/2007 14:34:43	52483.5	494.0	2.54	2.514	0.130	-0.88662
3/7/2007 14:34:44	52484.0	494.5	2.53	2.511	0.127	-0.89686
3/7/2007 14:34:47	52487.0	497.5	2.53	2.507	0.123	-0.91132
3/7/2007 14:34:51	52491.0	501.5	2.53	2.504	0.119	-0.92280

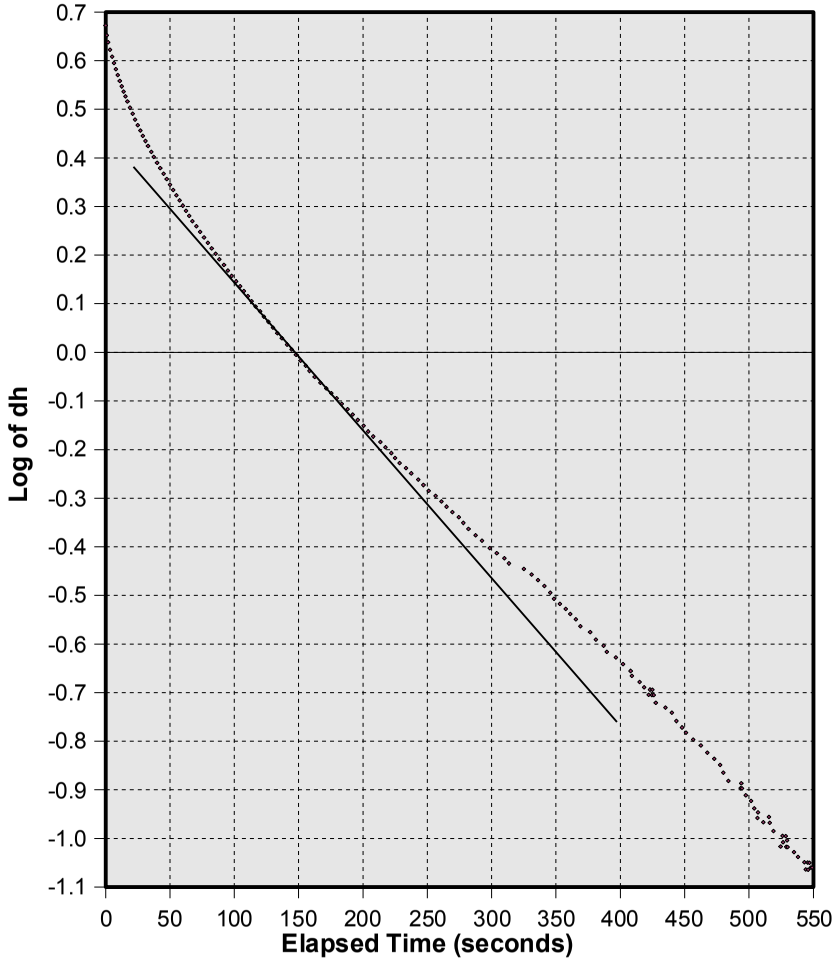
Slug Test P3-12

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 14:34:53	52493.5	504.0	2.52	2.499	0.115	-0.93807
3/7/2007 14:34:56	52496.0	506.5	2.52	2.494	0.110	-0.95781
3/7/2007 14:34:56	52496.5	507.0	2.52	2.497	0.113	-0.94624
3/7/2007 14:35:00	52500.5	511.0	2.52	2.492	0.108	-0.96668
3/7/2007 14:35:05	52505.0	515.5	2.52	2.495	0.111	-0.95566
3/7/2007 14:35:05	52505.5	516.0	2.52	2.492	0.108	-0.96769
3/7/2007 14:35:08	52508.5	519.0	2.51	2.488	0.104	-0.98475
3/7/2007 14:35:14	52514.0	524.5	2.51	2.480	0.096	-1.01639
3/7/2007 14:35:15	52515.5	526.0	2.51	2.485	0.101	-0.99473
3/7/2007 14:35:16	52516.0	526.5	2.51	2.482	0.098	-1.00791
3/7/2007 14:35:18	52518.0	528.5	2.51	2.485	0.101	-0.99527
3/7/2007 14:35:18	52518.5	529.0	2.51	2.480	0.096	-1.01741
3/7/2007 14:35:19	52519.0	529.5	2.51	2.483	0.099	-1.00417
3/7/2007 14:35:19	52519.5	530.0	2.51	2.480	0.096	-1.01764
3/7/2007 14:35:24	52524.5	535.0	2.5	2.478	0.094	-1.02794
3/7/2007 14:35:27	52527.5	538.0	2.5	2.476	0.092	-1.03802
3/7/2007 14:35:32	52532.5	543.0	2.5	2.473	0.089	-1.04883
3/7/2007 14:35:33	52533.5	544.0	2.5	2.470	0.086	-1.06391
3/7/2007 14:35:35	52535.0	545.5	2.5	2.473	0.089	-1.04944
3/7/2007 14:35:35	52535.5	546.0	2.5	2.470	0.086	-1.06441
3/7/2007 14:35:36	52536.5	547.0	2.5	2.473	0.089	-1.04980
3/7/2007 14:35:37	52537.5	548.0	2.5	2.471	0.087	-1.05991
3/7/2007 14:35:38	52538.5	549.0	2.5	2.471	0.087	-1.06016

Slug Test P3-12

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	18.18	ft
Stick up height:	3.13	ft
Depth to sand pack (BGS):	7.00	ft
Depth to screened interval (BGS):	8.18	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	4.14	ft
Initial Head Change:	4.70	ft
Total well length:	21.31	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.55	ft
Drawdown at time = t (y_t):	0.64	ft
Elapsed Time between y_0 and y_t (t):	129	sec
Initial water column in well (L_w):	17.17	ft
$\ln(R_e/r_w)$ =	2.24	
K =	5.35E-06	ft/sec
	1.63E-04	**cm/sec**
	168.76	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-13

Initial offset in logger reading (feet):	-0.040	Date:	04/18/2007
Offset increment in logger reading (feet/sec):	0.000007		
Initial depth to water table (feet):	4.03		
Depth of probe below water table (feet):	4.022		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
4/18/2007 13:58:56	50336.5	0.0	7.89	7.927	3.905	0.59161
4/18/2007 13:58:57	50337.0	0.5	7.72	7.760	3.738	0.57262
4/18/2007 13:58:57	50337.5	1.0	7.67	7.709	3.687	0.56666
4/18/2007 13:58:58	50338.5	2.0	7.63	7.662	3.640	0.56108
4/18/2007 13:58:59	50339.5	3.0	7.56	7.598	3.576	0.55338
4/18/2007 13:59:00	50340.5	4.0	7.5	7.537	3.515	0.54590
4/18/2007 13:59:01	50341.5	5.0	7.45	7.484	3.462	0.53931
4/18/2007 13:59:02	50342.5	6.0	7.4	7.438	3.416	0.53349
4/18/2007 13:59:03	50343.5	7.0	7.36	7.392	3.370	0.52761
4/18/2007 13:59:04	50344.5	8.0	7.31	7.350	3.328	0.52216
4/18/2007 13:59:05	50345.5	9.0	7.27	7.311	3.289	0.51704
4/18/2007 13:59:07	50347.0	10.5	7.22	7.258	3.236	0.50998
4/18/2007 13:59:08	50348.5	12.0	7.17	7.207	3.185	0.50308
4/18/2007 13:59:10	50350.0	13.5	7.13	7.162	3.140	0.49690
4/18/2007 13:59:11	50351.5	15.0	7.08	7.118	3.096	0.49077
4/18/2007 13:59:13	50353.0	16.5	7.04	7.079	3.057	0.48526
4/18/2007 13:59:14	50354.5	18.0	7	7.040	3.018	0.47968
4/18/2007 13:59:16	50356.0	19.5	6.96	7.001	2.979	0.47403
4/18/2007 13:59:18	50358.0	21.5	6.92	6.955	2.933	0.46727
4/18/2007 13:59:20	50360.0	23.5	6.88	6.914	2.892	0.46115
4/18/2007 13:59:22	50362.0	25.5	6.84	6.876	2.854	0.45541
4/18/2007 13:59:24	50364.0	27.5	6.8	6.837	2.815	0.44943
4/18/2007 13:59:26	50366.5	30.0	6.76	6.796	2.774	0.44305
4/18/2007 13:59:28	50368.5	32.0	6.73	6.762	2.740	0.43769
4/18/2007 13:59:31	50371.0	34.5	6.69	6.726	2.704	0.43194
4/18/2007 13:59:33	50373.5	37.0	6.65	6.689	2.667	0.42596
4/18/2007 13:59:36	50376.0	39.5	6.62	6.658	2.636	0.42088
4/18/2007 13:59:38	50378.5	42.0	6.59	6.624	2.602	0.41523
4/18/2007 13:59:41	50381.0	44.5	6.56	6.593	2.572	0.41019
4/18/2007 13:59:44	50384.0	47.5	6.52	6.557	2.536	0.40407
4/18/2007 13:59:47	50387.5	51.0	6.49	6.523	2.501	0.39820
4/18/2007 13:59:50	50390.5	54.0	6.46	6.491	2.469	0.39260
4/18/2007 13:59:53	50393.5	57.0	6.43	6.462	2.440	0.38747
4/18/2007 13:59:57	50397.0	60.5	6.39	6.430	2.408	0.38173
4/18/2007 14:00:00	50400.0	63.5	6.37	6.401	2.379	0.37647
4/18/2007 14:00:04	50404.0	67.5	6.34	6.371	2.349	0.37095
4/18/2007 14:00:07	50407.5	71.0	6.31	6.344	2.322	0.36593
4/18/2007 14:00:11	50411.0	74.5	6.28	6.317	2.295	0.36085
4/18/2007 14:00:15	50415.0	78.5	6.25	6.288	2.266	0.35532
4/18/2007 14:00:19	50419.0	82.5	6.22	6.256	2.234	0.34914
4/18/2007 14:00:23	50423.0	86.5	6.19	6.228	2.206	0.34365
4/18/2007 14:00:27	50427.5	91.0	6.17	6.201	2.179	0.33830
4/18/2007 14:00:32	50432.0	95.5	6.14	6.174	2.152	0.33288
4/18/2007 14:00:36	50436.5	100.0	6.11	6.147	2.125	0.32739

Slug Test P3-13

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
4/18/2007 14:00:41	50441.0	104.5	6.09	6.122	2.100	0.32224
4/18/2007 14:00:46	50446.0	109.5	6.06	6.097	2.075	0.31703
4/18/2007 14:00:52	50452.0	115.5	6.03	6.069	2.047	0.31113
4/18/2007 14:00:57	50457.5	121.0	6.01	6.044	2.022	0.30578
4/18/2007 14:01:03	50463.0	126.5	5.98	6.019	1.997	0.30037
4/18/2007 14:01:08	50468.0	131.5	5.96	5.994	1.972	0.29489
4/18/2007 14:01:13	50473.5	137.0	5.94	5.971	1.949	0.28979
4/18/2007 14:01:19	50479.5	143.0	5.91	5.946	1.924	0.28417
4/18/2007 14:01:25	50485.0	148.5	5.89	5.923	1.901	0.27894
4/18/2007 14:01:30	50490.5	154.0	5.86	5.900	1.878	0.27364
4/18/2007 14:01:37	50497.0	160.5	5.84	5.875	1.853	0.26781
4/18/2007 14:01:44	50504.0	167.5	5.82	5.852	1.830	0.26237
4/18/2007 14:01:50	50510.0	173.5	5.79	5.829	1.807	0.25687
4/18/2007 14:01:56	50516.0	179.5	5.77	5.806	1.784	0.25129
4/18/2007 14:02:03	50523.0	186.5	5.75	5.782	1.761	0.24564
4/18/2007 14:02:08	50528.0	191.5	5.73	5.761	1.739	0.24042
4/18/2007 14:02:15	50535.0	198.5	5.71	5.741	1.719	0.23539
4/18/2007 14:02:21	50541.0	204.5	5.69	5.720	1.698	0.23004
4/18/2007 14:02:27	50547.5	211.0	5.66	5.699	1.677	0.22463
4/18/2007 14:02:34	50554.0	217.5	5.64	5.676	1.654	0.21862
4/18/2007 14:02:40	50560.0	223.5	5.62	5.657	1.635	0.21359
4/18/2007 14:02:46	50566.0	229.5	5.6	5.636	1.614	0.20796
4/18/2007 14:02:52	50572.5	236.0	5.58	5.617	1.595	0.20281
4/18/2007 14:02:58	50578.5	242.0	5.56	5.596	1.574	0.19704
4/18/2007 14:03:04	50584.5	248.0	5.54	5.578	1.556	0.19204
4/18/2007 14:03:11	50591.5	255.0	5.52	5.559	1.537	0.18669
4/18/2007 14:03:19	50599.0	262.5	5.51	5.540	1.518	0.18127
4/18/2007 14:03:25	50605.0	268.5	5.49	5.521	1.499	0.17579
4/18/2007 14:03:32	50612.0	275.5	5.47	5.503	1.481	0.17052
4/18/2007 14:03:38	50618.5	282.0	5.45	5.486	1.464	0.16550
4/18/2007 14:03:44	50624.5	288.0	5.43	5.469	1.447	0.16041
4/18/2007 14:03:52	50632.0	295.5	5.41	5.448	1.426	0.15404
4/18/2007 14:03:58	50638.5	302.0	5.4	5.431	1.409	0.14882
4/18/2007 14:04:07	50647.5	311.0	5.38	5.414	1.392	0.14353
4/18/2007 14:04:15	50655.0	318.5	5.36	5.398	1.376	0.13849
4/18/2007 14:04:22	50662.0	325.5	5.35	5.380	1.359	0.13307
4/18/2007 14:04:28	50668.5	332.0	5.33	5.363	1.341	0.12759
4/18/2007 14:04:37	50677.0	340.5	5.31	5.346	1.324	0.12203
4/18/2007 14:04:44	50684.0	347.5	5.3	5.329	1.307	0.11640
4/18/2007 14:04:52	50692.0	355.5	5.28	5.312	1.290	0.11070
4/18/2007 14:05:01	50701.5	365.0	5.26	5.295	1.273	0.10492
4/18/2007 14:05:12	50712.0	375.5	5.24	5.278	1.256	0.09905
4/18/2007 14:05:21	50721.0	384.5	5.23	5.263	1.241	0.09381
4/18/2007 14:05:30	50730.0	393.5	5.21	5.247	1.225	0.08815
4/18/2007 14:05:37	50737.5	401.0	5.2	5.232	1.210	0.08279
4/18/2007 14:05:49	50749.5	413.0	5.18	5.217	1.195	0.07734
4/18/2007 14:05:57	50757.5	421.0	5.17	5.202	1.180	0.07183
4/18/2007 14:06:08	50768.5	432.0	5.15	5.188	1.166	0.06662
4/18/2007 14:06:21	50781.0	444.5	5.14	5.173	1.151	0.06096

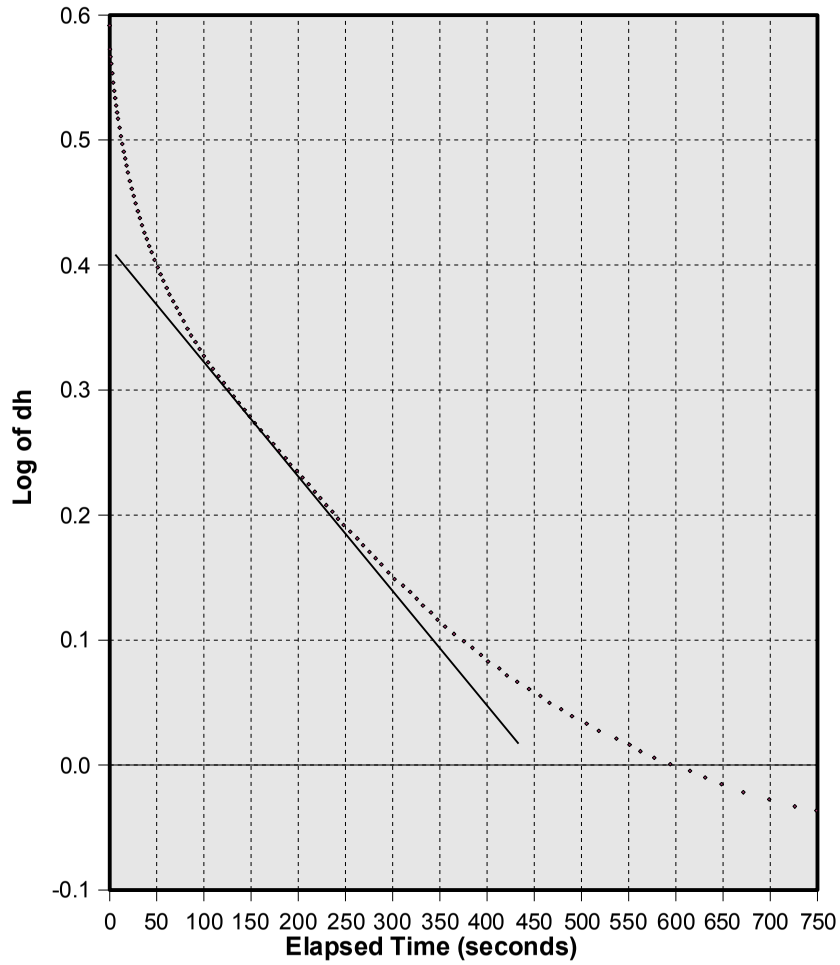
Slug Test P3-13

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
4/18/2007 14:06:33	50793.0	456.5	5.12	5.158	1.136	0.05523
4/18/2007 14:06:42	50802.5	466.0	5.11	5.143	1.122	0.04981
4/18/2007 14:06:55	50815.0	478.5	5.1	5.130	1.108	0.04471
4/18/2007 14:07:06	50826.5	490.0	5.08	5.116	1.094	0.03916
4/18/2007 14:07:22	50842.0	505.5	5.07	5.101	1.079	0.03312
4/18/2007 14:07:35	50855.0	518.5	5.05	5.087	1.065	0.02742
4/18/2007 14:07:53	50873.5	537.0	5.04	5.072	1.050	0.02120
4/18/2007 14:08:07	50887.5	551.0	5.03	5.060	1.038	0.01617
4/18/2007 14:08:19	50899.0	562.5	5.02	5.048	1.026	0.01108
4/18/2007 14:08:33	50913.5	577.0	5	5.036	1.014	0.00593
4/18/2007 14:08:50	50930.5	594.0	4.99	5.024	1.002	0.00070
4/18/2007 14:09:11	50951.5	615.0	4.98	5.011	0.989	-0.00460
4/18/2007 14:09:27	50967.5	631.0	4.97	4.999	0.977	-0.00995
4/18/2007 14:09:45	50985.0	648.5	4.96	4.987	0.965	-0.01537
4/18/2007 14:10:08	51008.0	671.5	4.94	4.973	0.951	-0.02179
4/18/2007 14:10:35	51035.5	699.0	4.93	4.961	0.939	-0.02739
4/18/2007 14:11:02	51062.5	726.0	4.92	4.949	0.927	-0.03307
4/18/2007 14:11:25	51085.5	749.0	4.91	4.941	0.920	-0.03644

Slug Test P3-13

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	14.45	ft
Stick up height:	3.16	ft
Depth to sand pack (BGS):	4.00	ft
Depth to screened interval (BGS):	10.00	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	4.03	ft
Initial Head Change:	3.90	ft
Total well length:	17.61	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	4.45	ft
Length of open section (L_e):	4.45	ft
L_e / r_w:	12.5647	
A (dimensionless):	2.005	
B (dimensionless):	0.316	
Drawdown at time = 0 (y_0):	2.16	ft
Drawdown at time = t (y_t):	1.59	ft
Elapsed Time between y_0 and y_t (t):	145	sec
Initial water column in well (L_w):	13.58	ft
$\ln(R_e/r_w)$ =	1.81	
K =	3.02E-06	ft/sec
	9.20E-05	**cm/sec**
	95.20	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-14

Initial offset in logger reading (feet):	0.078	Date:	12/12/2006
Offset increment in logger reading (feet/sec):	0.000015		
Initial depth to water table (feet):	13.95		
Depth of probe below water table (feet):	6.453		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:07:01	54421.0	0.0	2.11	2.024	4.429	0.64630
12/12/2006 15:07:02	54422.0	1.0	2.32	2.239	4.214	0.62469
12/12/2006 15:07:02	54422.5	1.5	2.45	2.372	4.081	0.61076
12/12/2006 15:07:04	54424.0	3.0	2.57	2.485	3.968	0.59857
12/12/2006 15:07:05	54425.5	4.5	2.7	2.618	3.835	0.58377
12/12/2006 15:07:06	54426.5	5.5	2.83	2.749	3.704	0.56868
12/12/2006 15:07:07	54427.5	6.5	2.97	2.886	3.567	0.55231
12/12/2006 15:07:08	54428.5	7.5	3.11	3.028	3.425	0.53467
12/12/2006 15:07:09	54429.5	8.5	3.25	3.165	3.288	0.51694
12/12/2006 15:07:10	54430.5	9.5	3.38	3.298	3.155	0.49901
12/12/2006 15:07:11	54431.5	10.5	3.51	3.429	3.024	0.48060
12/12/2006 15:07:12	54432.5	11.5	3.64	3.555	2.898	0.46212
12/12/2006 15:07:13	54433.5	12.5	3.76	3.675	2.778	0.44376
12/12/2006 15:07:14	54434.5	13.5	3.87	3.787	2.665	0.42572
12/12/2006 15:07:15	54435.5	14.5	3.99	3.902	2.550	0.40657
12/12/2006 15:07:16	54436.5	15.5	4.09	4.010	2.442	0.38778
12/12/2006 15:07:17	54437.5	16.5	4.2	4.114	2.338	0.36888
12/12/2006 15:07:18	54438.5	17.5	4.3	4.214	2.238	0.34990
12/12/2006 15:07:19	54439.5	18.5	4.39	4.307	2.145	0.33148
12/12/2006 15:07:20	54440.0	19.0	4.44	4.356	2.096	0.32144
12/12/2006 15:07:21	54441.0	20.0	4.52	4.440	2.012	0.30368
12/12/2006 15:07:22	54442.0	21.0	4.61	4.522	1.930	0.28562
12/12/2006 15:07:23	54443.0	22.0	4.68	4.597	1.855	0.26841
12/12/2006 15:07:24	54444.0	23.0	4.75	4.668	1.784	0.25147
12/12/2006 15:07:25	54445.0	24.0	4.82	4.734	1.718	0.23510
12/12/2006 15:07:26	54446.0	25.0	4.88	4.800	1.652	0.21810
12/12/2006 15:07:27	54447.0	26.0	4.93	4.849	1.603	0.20503
12/12/2006 15:07:29	54449.0	28.0	4.98	4.893	1.559	0.19295
12/12/2006 15:07:32	54452.5	31.5	5.02	4.937	1.515	0.18054
12/12/2006 15:07:35	54455.0	34.0	5.06	4.975	1.477	0.16952
12/12/2006 15:07:37	54457.5	36.5	5.09	5.010	1.443	0.15912
12/12/2006 15:07:40	54460.0	39.0	5.13	5.045	1.408	0.14846
12/12/2006 15:07:42	54462.5	41.5	5.16	5.078	1.375	0.13817
12/12/2006 15:07:45	54465.0	44.0	5.19	5.111	1.342	0.12763
12/12/2006 15:07:47	54467.0	46.0	5.23	5.147	1.306	0.11583
12/12/2006 15:07:48	54468.5	47.5	5.26	5.180	1.273	0.10472
12/12/2006 15:07:49	54469.5	48.5	5.29	5.209	1.244	0.09471
12/12/2006 15:07:50	54470.5	49.5	5.33	5.242	1.211	0.08304
12/12/2006 15:07:51	54471.5	50.5	5.36	5.280	1.173	0.06920
12/12/2006 15:07:52	54472.5	51.5	5.4	5.317	1.136	0.05528
12/12/2006 15:07:53	54473.5	52.5	5.44	5.355	1.098	0.04050
12/12/2006 15:07:54	54474.5	53.5	5.48	5.392	1.061	0.02562
12/12/2006 15:07:55	54475.5	54.5	5.51	5.430	1.023	0.00978
12/12/2006 15:07:56	54476.5	55.5	5.55	5.468	0.985	-0.00665

Slug Test P3-14

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:07:57	54477.5	56.5	5.59	5.503	0.950	-0.02236
12/12/2006 15:07:58	54478.5	57.5	5.61	5.527	0.926	-0.03347
12/12/2006 15:08:00	54480.0	59.0	5.63	5.551	0.902	-0.04486
12/12/2006 15:08:03	54483.5	62.5	5.66	5.573	0.880	-0.05556
12/12/2006 15:08:05	54485.5	64.5	5.68	5.600	0.853	-0.06908
12/12/2006 15:08:08	54488.0	67.0	5.71	5.622	0.831	-0.08041
12/12/2006 15:08:11	54491.0	70.0	5.73	5.642	0.811	-0.09097
12/12/2006 15:08:14	54494.0	73.0	5.75	5.662	0.791	-0.10179
12/12/2006 15:08:17	54497.0	76.0	5.77	5.684	0.769	-0.11401
12/12/2006 15:08:20	54500.0	79.0	5.79	5.702	0.750	-0.12485
12/12/2006 15:08:23	54503.5	82.5	5.8	5.720	0.732	-0.13537
12/12/2006 15:08:27	54507.0	86.0	5.82	5.738	0.714	-0.14614
12/12/2006 15:08:30	54510.5	89.5	5.84	5.757	0.695	-0.15782
12/12/2006 15:08:34	54514.0	93.0	5.86	5.773	0.679	-0.16789
12/12/2006 15:08:38	54518.0	97.0	5.87	5.790	0.662	-0.17886
12/12/2006 15:08:41	54521.5	100.5	5.89	5.806	0.646	-0.18944
12/12/2006 15:08:45	54525.5	104.5	5.91	5.821	0.632	-0.19960
12/12/2006 15:08:49	54529.5	108.5	5.92	5.836	0.617	-0.20999
12/12/2006 15:08:54	54534.0	113.0	5.94	5.852	0.601	-0.22136
12/12/2006 15:08:59	54539.0	118.0	5.95	5.867	0.586	-0.23229
12/12/2006 15:09:03	54543.5	122.5	5.97	5.883	0.570	-0.24427
12/12/2006 15:09:08	54548.0	127.0	5.98	5.898	0.555	-0.25580
12/12/2006 15:09:12	54552.0	131.0	6	5.911	0.542	-0.26604
12/12/2006 15:09:15	54555.5	134.5	6.01	5.924	0.529	-0.27655
12/12/2006 15:09:20	54560.0	139.0	6.02	5.937	0.516	-0.28729
12/12/2006 15:09:23	54563.5	142.5	6.03	5.949	0.504	-0.29747
12/12/2006 15:09:27	54567.5	146.5	6.05	5.961	0.491	-0.30876
12/12/2006 15:09:31	54571.5	150.5	6.06	5.974	0.478	-0.32035
12/12/2006 15:09:35	54575.5	154.5	6.07	5.985	0.467	-0.33040
12/12/2006 15:09:38	54578.5	157.5	6.08	5.996	0.456	-0.34070
12/12/2006 15:09:42	54582.5	161.5	6.09	6.007	0.445	-0.35124
12/12/2006 15:09:46	54586.0	165.0	6.1	6.018	0.434	-0.36205
12/12/2006 15:09:50	54590.0	169.0	6.11	6.029	0.424	-0.37312
12/12/2006 15:09:53	54593.5	172.5	6.13	6.040	0.413	-0.38450
12/12/2006 15:09:57	54597.5	176.5	6.14	6.051	0.402	-0.39617
12/12/2006 15:10:01	54601.5	180.5	6.15	6.064	0.389	-0.41039
12/12/2006 15:10:05	54605.5	184.5	6.16	6.073	0.380	-0.42049
12/12/2006 15:10:08	54608.5	187.5	6.17	6.082	0.371	-0.43086
12/12/2006 15:10:11	54611.5	190.5	6.18	6.091	0.362	-0.44147
12/12/2006 15:10:15	54615.0	194.0	6.19	6.100	0.353	-0.45235
12/12/2006 15:10:19	54619.5	198.5	6.2	6.111	0.342	-0.46601
12/12/2006 15:10:22	54622.5	201.5	6.2	6.119	0.334	-0.47623
12/12/2006 15:10:25	54625.5	204.5	6.21	6.128	0.325	-0.48804
12/12/2006 15:10:29	54629.0	208.0	6.22	6.137	0.316	-0.50016
12/12/2006 15:10:33	54633.0	212.0	6.23	6.145	0.307	-0.51261
12/12/2006 15:10:37	54637.0	216.0	6.24	6.154	0.298	-0.52544
12/12/2006 15:10:40	54640.5	219.5	6.25	6.163	0.289	-0.53867
12/12/2006 15:10:44	54644.0	223.0	6.26	6.171	0.281	-0.55077
12/12/2006 15:10:47	54647.5	226.5	6.26	6.178	0.274	-0.56162

Slug Test P3-14

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:10:50	54650.0	229.0	6.27	6.185	0.267	-0.57279
12/12/2006 15:10:55	54655.0	234.0	6.28	6.193	0.260	-0.58585
12/12/2006 15:10:58	54658.0	237.0	6.29	6.200	0.253	-0.59765
12/12/2006 15:11:02	54662.0	241.0	6.29	6.207	0.246	-0.60975
12/12/2006 15:11:05	54665.5	244.5	6.3	6.213	0.240	-0.62039
12/12/2006 15:11:08	54668.5	247.5	6.31	6.220	0.233	-0.63318
12/12/2006 15:11:12	54672.5	251.5	6.31	6.226	0.227	-0.64441
12/12/2006 15:11:16	54676.0	255.0	6.32	6.233	0.220	-0.65792
12/12/2006 15:11:20	54680.0	259.0	6.33	6.240	0.213	-0.67185
12/12/2006 15:11:23	54683.5	262.5	6.33	6.246	0.207	-0.68415
12/12/2006 15:11:25	54685.5	264.5	6.34	6.251	0.202	-0.69471
12/12/2006 15:11:29	54689.5	268.5	6.34	6.257	0.196	-0.70767
12/12/2006 15:11:33	54693.5	272.5	6.35	6.262	0.191	-0.71876
12/12/2006 15:11:38	54698.0	277.0	6.35	6.267	0.185	-0.73245
12/12/2006 15:11:40	54700.0	279.0	6.36	6.272	0.180	-0.74427
12/12/2006 15:11:44	54704.5	283.5	6.37	6.278	0.174	-0.75880
12/12/2006 15:11:47	54707.0	286.0	6.37	6.283	0.169	-0.77135
12/12/2006 15:11:50	54710.5	289.5	6.37	6.287	0.165	-0.78159
12/12/2006 15:11:53	54713.5	292.5	6.38	6.292	0.160	-0.79480
12/12/2006 15:11:56	54716.5	295.5	6.38	6.296	0.156	-0.80565
12/12/2006 15:11:59	54719.5	298.5	6.39	6.301	0.151	-0.81962
12/12/2006 15:12:03	54723.0	302.0	6.39	6.305	0.148	-0.83109
12/12/2006 15:12:06	54726.0	305.0	6.4	6.309	0.144	-0.84289
12/12/2006 15:12:08	54728.5	307.5	6.4	6.314	0.139	-0.85816
12/12/2006 15:12:12	54732.5	311.5	6.41	6.318	0.135	-0.87068
12/12/2006 15:12:16	54736.0	315.0	6.41	6.322	0.131	-0.88360
12/12/2006 15:12:20	54740.0	319.0	6.41	6.327	0.126	-0.90032
12/12/2006 15:12:23	54743.0	322.0	6.42	6.331	0.122	-0.91419
12/12/2006 15:12:27	54747.5	326.5	6.42	6.336	0.117	-0.93214
12/12/2006 15:12:30	54750.5	329.5	6.43	6.340	0.113	-0.94708
12/12/2006 15:12:34	54754.5	333.5	6.43	6.345	0.108	-0.96650
12/12/2006 15:12:38	54758.5	337.5	6.44	6.349	0.104	-0.98263
12/12/2006 15:12:43	54763.0	342.0	6.44	6.353	0.100	-0.99936
12/12/2006 15:12:44	54764.5	343.5	6.44	6.355	0.097	-1.01246
12/12/2006 15:12:49	54769.0	348.0	6.45	6.359	0.093	-1.03040
12/12/2006 15:12:50	54770.5	349.5	6.45	6.362	0.090	-1.04450
12/12/2006 15:12:51	54771.0	350.0	6.45	6.359	0.093	-1.03026
12/12/2006 15:12:53	54773.0	352.0	6.45	6.362	0.090	-1.04431
12/12/2006 15:12:56	54776.0	355.0	6.45	6.366	0.086	-1.06376
12/12/2006 15:13:01	54781.0	360.0	6.46	6.370	0.082	-1.08396
12/12/2006 15:13:03	54783.5	362.5	6.46	6.373	0.079	-1.09986
12/12/2006 15:13:04	54784.0	363.0	6.46	6.370	0.082	-1.08372
12/12/2006 15:13:04	54784.5	363.5	6.46	6.373	0.079	-1.09977
12/12/2006 15:13:06	54786.0	365.0	6.46	6.375	0.077	-1.11071
12/12/2006 15:13:09	54789.0	368.0	6.47	6.377	0.076	-1.12181
12/12/2006 15:13:10	54790.5	369.5	6.47	6.379	0.074	-1.13333
12/12/2006 15:13:14	54794.0	373.0	6.47	6.381	0.072	-1.14497
12/12/2006 15:13:16	54796.5	375.5	6.47	6.384	0.069	-1.16332
12/12/2006 15:13:19	54799.0	378.0	6.47	6.386	0.067	-1.17591

Slug Test P3-14

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:13:19	54799.5	378.5	6.47	6.384	0.069	-1.16303
12/12/2006 15:13:20	54800.0	379.0	6.47	6.386	0.067	-1.17581
12/12/2006 15:13:22	54802.0	381.0	6.48	6.388	0.065	-1.18883
12/12/2006 15:13:23	54803.0	382.0	6.47	6.386	0.067	-1.17551
12/12/2006 15:13:23	54803.5	382.5	6.48	6.388	0.065	-1.18867
12/12/2006 15:13:26	54806.0	385.0	6.48	6.390	0.063	-1.20204
12/12/2006 15:13:27	54807.0	386.0	6.48	6.393	0.060	-1.22318
12/12/2006 15:13:27	54807.5	386.5	6.48	6.390	0.063	-1.20188
12/12/2006 15:13:28	54808.5	387.5	6.48	6.393	0.060	-1.22302
12/12/2006 15:13:31	54811.0	390.0	6.48	6.395	0.058	-1.23750
12/12/2006 15:13:34	54814.0	393.0	6.49	6.397	0.056	-1.25242
12/12/2006 15:13:35	54815.0	394.0	6.48	6.395	0.058	-1.23704
12/12/2006 15:13:35	54815.5	394.5	6.49	6.397	0.056	-1.25224
12/12/2006 15:13:38	54818.0	397.0	6.49	6.399	0.054	-1.26774
12/12/2006 15:13:40	54820.5	399.5	6.49	6.401	0.052	-1.28382
12/12/2006 15:13:43	54823.5	402.5	6.49	6.404	0.049	-1.30922
12/12/2006 15:13:47	54827.5	406.5	6.49	6.406	0.047	-1.32673
12/12/2006 15:13:51	54831.0	410.0	6.5	6.407	0.045	-1.34505
12/12/2006 15:13:55	54835.0	414.0	6.5	6.410	0.042	-1.37427
12/12/2006 15:13:58	54838.0	417.0	6.5	6.412	0.040	-1.39484
12/12/2006 15:13:58	54838.5	417.5	6.5	6.410	0.042	-1.37372
12/12/2006 15:14:00	54840.0	419.0	6.5	6.412	0.040	-1.39451
12/12/2006 15:14:02	54842.0	421.0	6.5	6.414	0.038	-1.41627
12/12/2006 15:14:02	54842.5	421.5	6.5	6.412	0.040	-1.39410
12/12/2006 15:14:03	54843.0	422.0	6.5	6.414	0.038	-1.41609
12/12/2006 15:14:07	54847.5	426.5	6.51	6.416	0.036	-1.43853
12/12/2006 15:14:10	54850.5	429.5	6.51	6.418	0.034	-1.46248
12/12/2006 15:14:11	54851.0	430.0	6.51	6.416	0.036	-1.43790
12/12/2006 15:14:11	54851.5	430.5	6.51	6.418	0.034	-1.46229
12/12/2006 15:14:12	54852.0	431.0	6.51	6.419	0.033	-1.47497
12/12/2006 15:14:12	54852.5	431.5	6.51	6.418	0.035	-1.46210
12/12/2006 15:14:13	54853.5	432.5	6.51	6.421	0.032	-1.50139
12/12/2006 15:14:14	54854.0	433.0	6.51	6.419	0.034	-1.47457
12/12/2006 15:14:14	54854.5	433.5	6.51	6.418	0.035	-1.46172
12/12/2006 15:14:15	54855.0	434.0	6.51	6.421	0.032	-1.50108
12/12/2006 15:14:18	54858.0	437.0	6.51	6.423	0.030	-1.52885
12/12/2006 15:14:18	54858.5	437.5	6.51	6.421	0.032	-1.50034
12/12/2006 15:14:19	54859.0	438.0	6.51	6.423	0.030	-1.52863
12/12/2006 15:14:23	54863.5	442.5	6.51	6.425	0.028	-1.55793
12/12/2006 15:14:27	54867.5	446.5	6.52	6.428	0.025	-1.60670
12/12/2006 15:14:28	54868.5	447.5	6.51	6.425	0.028	-1.55674
12/12/2006 15:14:29	54869.5	448.5	6.52	6.428	0.025	-1.60617
12/12/2006 15:14:33	54873.0	452.0	6.52	6.430	0.023	-1.64173
12/12/2006 15:14:38	54878.0	457.0	6.52	6.432	0.021	-1.67998
12/12/2006 15:14:39	54879.0	458.0	6.52	6.430	0.023	-1.64000
12/12/2006 15:14:39	54879.5	458.5	6.52	6.432	0.021	-1.67951
12/12/2006 15:14:42	54882.5	461.5	6.52	6.434	0.019	-1.72211
12/12/2006 15:14:46	54886.0	465.0	6.53	6.436	0.017	-1.76916
12/12/2006 15:14:46	54886.5	465.5	6.52	6.434	0.019	-1.72073

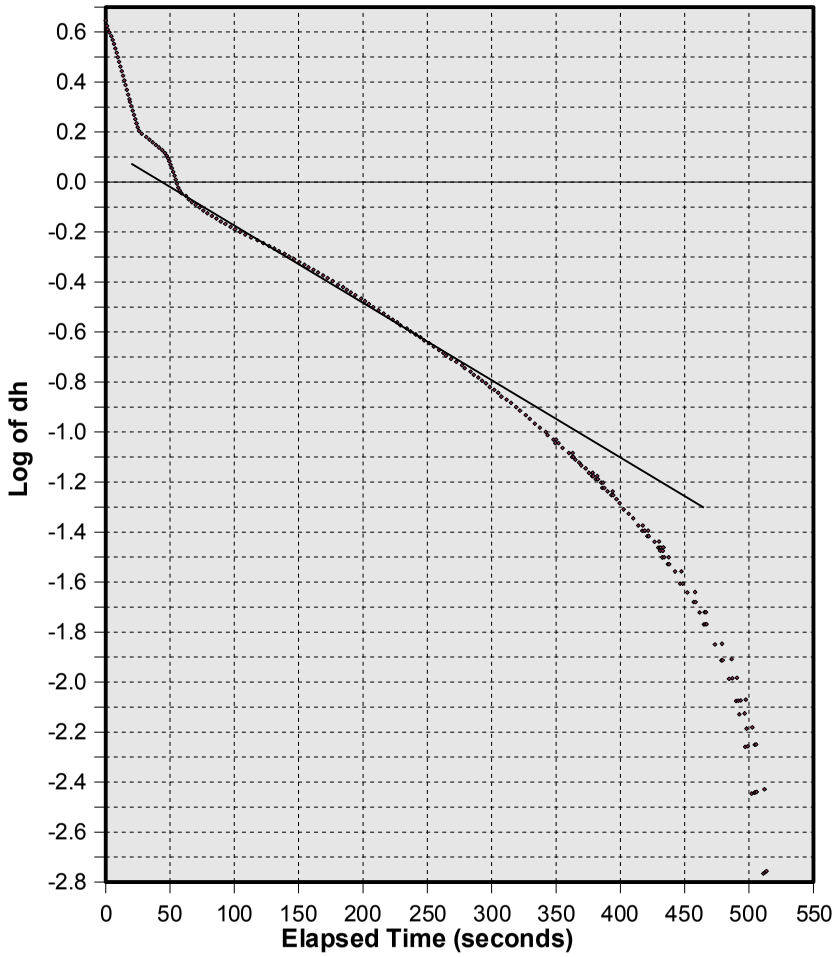
Slug Test P3-14

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 15:14:47	54887.0	466.0	6.53	6.436	0.017	-1.76878
12/12/2006 15:14:47	54887.5	466.5	6.52	6.434	0.019	-1.72038
12/12/2006 15:14:48	54888.0	467.0	6.53	6.436	0.017	-1.76839
12/12/2006 15:14:54	54894.5	473.5	6.53	6.439	0.014	-1.84942
12/12/2006 15:14:59	54899.5	478.5	6.53	6.440	0.012	-1.91292
12/12/2006 15:15:00	54900.0	479.0	6.53	6.438	0.014	-1.84687
12/12/2006 15:15:00	54900.5	479.5	6.53	6.440	0.012	-1.91239
12/12/2006 15:15:05	54905.5	484.5	6.53	6.442	0.010	-1.98669
12/12/2006 15:15:07	54907.5	486.5	6.53	6.440	0.012	-1.90863
12/12/2006 15:15:08	54908.0	487.0	6.53	6.442	0.010	-1.98510
12/12/2006 15:15:11	54911.0	490.0	6.53	6.444	0.008	-2.07600
12/12/2006 15:15:11	54911.5	490.5	6.53	6.442	0.010	-1.98287
12/12/2006 15:15:12	54912.5	491.5	6.53	6.444	0.008	-2.07482
12/12/2006 15:15:13	54913.5	492.5	6.54	6.445	0.007	-2.12886
12/12/2006 15:15:14	54914.5	493.5	6.53	6.444	0.008	-2.07326
12/12/2006 15:15:17	54917.5	496.5	6.54	6.445	0.007	-2.12532
12/12/2006 15:15:18	54918.0	497.0	6.54	6.447	0.006	-2.25956
12/12/2006 15:15:18	54918.5	497.5	6.53	6.444	0.009	-2.07015
12/12/2006 15:15:19	54919.0	498.0	6.54	6.446	0.007	-2.18601
12/12/2006 15:15:20	54920.0	499.0	6.54	6.447	0.006	-2.25717
12/12/2006 15:15:23	54923.0	502.0	6.54	6.449	0.004	-2.44650
12/12/2006 15:15:23	54923.5	502.5	6.54	6.446	0.007	-2.18148
12/12/2006 15:15:25	54925.0	504.0	6.54	6.449	0.004	-2.44283
12/12/2006 15:15:25	54925.5	504.5	6.54	6.447	0.006	-2.25067
12/12/2006 15:15:26	54926.0	505.0	6.54	6.449	0.004	-2.44100
12/12/2006 15:15:26	54926.5	505.5	6.54	6.447	0.006	-2.24949
12/12/2006 15:15:27	54927.0	506.0	6.54	6.449	0.004	-2.43919
12/12/2006 15:15:32	54932.0	511.0	6.54	6.451	0.002	-2.76612
12/12/2006 15:15:33	54933.0	512.0	6.54	6.449	0.004	-2.42845
12/12/2006 15:15:33	54933.5	512.5	6.54	6.451	0.002	-2.76039
12/12/2006 15:15:34	54934.5	513.5	6.54	6.451	0.002	-2.75661

Slug Test P3-14

Slug Test by Bouwer and Rice

Displacement Method:	Pump	
Well depth:	21.56	ft
Stick up height:	3.01	ft
Depth to sand pack (BGS):	5.50	ft
Depth to screened interval (BGS):	6.56	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	13.95	ft
Initial Head Change:	4.43	ft
Total well length:	24.57	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.2061	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	15.00	ft
Length of open section (L_e):	10.62	ft
L_e / r_w:	29.9859	
A (dimensionless):	2.559	
B (dimensionless):	0.426	
Drawdown at time = 0 (y_0):	0.89	ft
Drawdown at time = t (y_t):	0.16	ft
Elapsed Time between y_0 and y_t (t):	232.5	sec
Initial water column in well (L_w):	10.62	ft
$\ln(R_e/r_w)$ =	2.15	
K =	3.17E-05	ft/sec
	9.67E-04	**cm/sec**
	1000.91	ft/yr



Water above sand pack:	No
%Duration below sand pack:	100.00%
Water above screen:	No
%Duration below screen:	100.00%

Slug Test P3-15S

Initial offset in logger reading (feet):	-0.027	Date:	12/12/2006
Offset increment in logger reading (feet/sec):	0.000436		
Initial depth to water table (feet):	9.57		
Depth of probe below water table (feet):	8.000		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:47:27	53247.5	0.0	2.38	2.325	5.674	0.75392
12/12/2006 14:47:28	53248.0	0.5	2.39	2.339	5.661	0.75286
12/12/2006 14:47:28	53248.5	1.0	2.41	2.359	5.641	0.75134
12/12/2006 14:47:29	53249.0	1.5	2.47	2.418	5.582	0.74679
12/12/2006 14:47:29	53249.5	2.0	2.53	2.477	5.522	0.74211
12/12/2006 14:47:30	53250.0	2.5	2.6	2.548	5.451	0.73651
12/12/2006 14:47:30	53250.5	3.0	2.68	2.626	5.374	0.73027
12/12/2006 14:47:31	53251.0	3.5	2.75	2.699	5.301	0.72435
12/12/2006 14:47:31	53251.5	4.0	3.13	3.078	4.922	0.69215
12/12/2006 14:47:32	53252.5	5.0	3.41	3.356	4.644	0.66685
12/12/2006 14:47:33	53253.0	5.5	3.63	3.575	4.425	0.64589
12/12/2006 14:47:33	53253.5	6.0	3.82	3.764	4.236	0.62695
12/12/2006 14:47:34	53254.0	6.5	3.98	3.927	4.072	0.60983
12/12/2006 14:47:34	53254.5	7.0	4.06	4.009	3.990	0.60102
12/12/2006 14:47:35	53255.0	7.5	4.12	4.060	3.940	0.59546
12/12/2006 14:47:35	53255.5	8.0	4.17	4.113	3.887	0.58960
12/12/2006 14:47:36	53256.0	8.5	4.22	4.164	3.836	0.58389
12/12/2006 14:47:36	53256.5	9.0	4.29	4.231	3.768	0.57614
12/12/2006 14:47:37	53257.0	9.5	4.37	4.313	3.687	0.56661
12/12/2006 14:47:37	53257.5	10.0	4.46	4.404	3.596	0.55579
12/12/2006 14:47:38	53258.0	10.5	4.56	4.506	3.494	0.54332
12/12/2006 14:47:38	53258.5	11.0	4.66	4.604	3.396	0.53099
12/12/2006 14:47:39	53259.0	11.5	4.76	4.707	3.292	0.51751
12/12/2006 14:47:39	53259.5	12.0	4.87	4.809	3.191	0.50387
12/12/2006 14:47:40	53260.0	12.5	4.97	4.909	3.091	0.49007
12/12/2006 14:47:40	53260.5	13.0	5.07	5.010	2.990	0.47568
12/12/2006 14:47:41	53261.0	13.5	5.17	5.107	2.892	0.46124
12/12/2006 14:47:41	53261.5	14.0	5.26	5.198	2.801	0.44739
12/12/2006 14:47:42	53262.0	14.5	5.34	5.282	2.718	0.43420
12/12/2006 14:47:42	53262.5	15.0	5.42	5.359	2.641	0.42175
12/12/2006 14:47:43	53263.0	15.5	5.49	5.432	2.568	0.40962
12/12/2006 14:47:43	53263.5	16.0	5.57	5.509	2.490	0.39626
12/12/2006 14:47:44	53264.0	16.5	5.64	5.578	2.422	0.38409
12/12/2006 14:47:44	53264.5	17.0	5.7	5.638	2.362	0.37324
12/12/2006 14:47:45	53265.0	17.5	5.75	5.688	2.312	0.36399
12/12/2006 14:47:45	53265.5	18.0	5.79	5.734	2.265	0.35511
12/12/2006 14:47:46	53266.0	18.5	5.83	5.769	2.230	0.34839
12/12/2006 14:47:46	53266.5	19.0	5.87	5.805	2.195	0.34136
12/12/2006 14:47:47	53267.0	19.5	5.89	5.833	2.167	0.33583
12/12/2006 14:47:47	53267.5	20.0	5.92	5.858	2.142	0.33084
12/12/2006 14:47:48	53268.0	20.5	5.94	5.879	2.120	0.32640
12/12/2006 14:47:48	53268.5	21.0	5.96	5.901	2.099	0.32191
12/12/2006 14:47:49	53269.0	21.5	5.98	5.917	2.083	0.31863
12/12/2006 14:47:49	53269.5	22.0	5.99	5.932	2.068	0.31554

Slug Test P3-15S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:47:50	53270.0	22.5	6.01	5.948	2.052	0.31221
12/12/2006 14:47:50	53270.5	23.0	6.03	5.964	2.035	0.30865
12/12/2006 14:47:51	53271.0	23.5	6.04	5.982	2.018	0.30484
12/12/2006 14:47:51	53271.5	24.0	6.06	6.000	2.000	0.30099
12/12/2006 14:47:52	53272.0	24.5	6.08	6.017	1.983	0.29733
12/12/2006 14:47:52	53272.5	25.0	6.1	6.032	1.967	0.29386
12/12/2006 14:47:53	53273.0	25.5	6.11	6.050	1.949	0.28992
12/12/2006 14:47:53	53273.5	26.0	6.13	6.067	1.933	0.28616
12/12/2006 14:47:54	53274.0	26.5	6.15	6.085	1.915	0.28215
12/12/2006 14:47:54	53274.5	27.0	6.17	6.103	1.897	0.27810
12/12/2006 14:47:55	53275.0	27.5	6.18	6.119	1.880	0.27424
12/12/2006 14:47:55	53275.5	28.0	6.2	6.137	1.863	0.27011
12/12/2006 14:47:56	53276.0	28.5	6.22	6.153	1.847	0.26642
12/12/2006 14:47:56	53276.5	29.0	6.24	6.173	1.827	0.26174
12/12/2006 14:47:57	53277.0	29.5	6.25	6.187	1.812	0.25821
12/12/2006 14:47:57	53277.5	30.0	6.27	6.205	1.794	0.25393
12/12/2006 14:47:58	53278.0	30.5	6.29	6.220	1.780	0.25034
12/12/2006 14:47:58	53278.5	31.0	6.3	6.233	1.767	0.24721
12/12/2006 14:47:59	53279.0	31.5	6.31	6.247	1.753	0.24381
12/12/2006 14:47:59	53279.5	32.0	6.33	6.259	1.740	0.24063
12/12/2006 14:48:00	53280.0	32.5	6.34	6.272	1.728	0.23743
12/12/2006 14:48:00	53280.5	33.0	6.35	6.286	1.714	0.23395
12/12/2006 14:48:01	53281.0	33.5	6.37	6.301	1.699	0.23018
12/12/2006 14:48:01	53281.5	34.0	6.38	6.317	1.683	0.22613
12/12/2006 14:48:02	53282.0	34.5	6.4	6.331	1.668	0.22230
12/12/2006 14:48:02	53282.5	35.0	6.41	6.344	1.656	0.21896
12/12/2006 14:48:03	53283.0	35.5	6.43	6.360	1.640	0.21480
12/12/2006 14:48:03	53283.5	36.0	6.44	6.377	1.623	0.21033
12/12/2006 14:48:04	53284.0	36.5	6.46	6.394	1.605	0.20555
12/12/2006 14:48:04	53284.5	37.0	6.49	6.421	1.578	0.19824
12/12/2006 14:48:05	53285.0	37.5	6.51	6.445	1.555	0.19165
12/12/2006 14:48:05	53285.5	38.0	6.54	6.474	1.526	0.18353
12/12/2006 14:48:06	53286.0	38.5	6.58	6.511	1.489	0.17294
12/12/2006 14:48:06	53286.5	39.0	6.62	6.555	1.444	0.15968
12/12/2006 14:48:07	53287.0	39.5	6.66	6.595	1.405	0.14755
12/12/2006 14:48:07	53287.5	40.0	6.7	6.635	1.365	0.13507
12/12/2006 14:48:08	53288.0	40.5	6.74	6.674	1.326	0.12255
12/12/2006 14:48:08	53288.5	41.0	6.78	6.711	1.288	0.11000
12/12/2006 14:48:09	53289.0	41.5	6.82	6.747	1.252	0.09776
12/12/2006 14:48:09	53289.5	42.0	6.85	6.782	1.218	0.08553
12/12/2006 14:48:10	53290.0	42.5	6.89	6.815	1.185	0.07368
12/12/2006 14:48:10	53290.5	43.0	6.92	6.850	1.150	0.06074
12/12/2006 14:48:11	53291.0	43.5	6.95	6.880	1.119	0.04896
12/12/2006 14:48:11	53291.5	44.0	6.98	6.911	1.089	0.03685
12/12/2006 14:48:12	53292.0	44.5	7.01	6.940	1.060	0.02521
12/12/2006 14:48:12	53292.5	45.0	7.04	6.969	1.031	0.01325
12/12/2006 14:48:13	53293.0	45.5	7.07	6.995	1.004	0.00182
12/12/2006 14:48:13	53293.5	46.0	7.09	7.021	0.978	-0.00948
12/12/2006 14:48:14	53294.0	46.5	7.12	7.046	0.954	-0.02062

Slug Test P3-15S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:48:14	53294.5	47.0	7.14	7.070	0.930	-0.03159
12/12/2006 14:48:15	53295.0	47.5	7.17	7.094	0.906	-0.04284
12/12/2006 14:48:15	53295.5	48.0	7.19	7.117	0.882	-0.05439
12/12/2006 14:48:16	53296.0	48.5	7.21	7.140	0.860	-0.06575
12/12/2006 14:48:16	53296.5	49.0	7.23	7.159	0.841	-0.07535
12/12/2006 14:48:17	53297.0	49.5	7.25	7.179	0.821	-0.08569
12/12/2006 14:48:17	53297.5	50.0	7.27	7.199	0.801	-0.09628
12/12/2006 14:48:18	53298.0	50.5	7.29	7.216	0.783	-0.10603
12/12/2006 14:48:18	53298.5	51.0	7.31	7.236	0.764	-0.11714
12/12/2006 14:48:19	53299.0	51.5	7.33	7.251	0.749	-0.12563
12/12/2006 14:48:19	53299.5	52.0	7.34	7.269	0.731	-0.13606
12/12/2006 14:48:20	53300.0	52.5	7.36	7.284	0.715	-0.14554
12/12/2006 14:48:20	53300.5	53.0	7.37	7.299	0.700	-0.15461
12/12/2006 14:48:21	53301.0	53.5	7.39	7.314	0.686	-0.16388
12/12/2006 14:48:21	53301.5	54.0	7.4	7.328	0.672	-0.17269
12/12/2006 14:48:22	53302.0	54.5	7.42	7.343	0.657	-0.18236
12/12/2006 14:48:22	53302.5	55.0	7.43	7.356	0.643	-0.19156
12/12/2006 14:48:23	53303.0	55.5	7.44	7.367	0.633	-0.19890
12/12/2006 14:48:23	53303.5	56.0	7.46	7.380	0.620	-0.20777
12/12/2006 14:48:24	53304.0	56.5	7.47	7.393	0.607	-0.21682
12/12/2006 14:48:24	53304.5	57.0	7.48	7.403	0.596	-0.22460
12/12/2006 14:48:25	53305.0	57.5	7.49	7.414	0.585	-0.23253
12/12/2006 14:48:25	53305.5	58.0	7.51	7.428	0.572	-0.24287
12/12/2006 14:48:26	53306.0	58.5	7.52	7.439	0.561	-0.25114
12/12/2006 14:48:26	53306.5	59.0	7.53	7.448	0.552	-0.25800
12/12/2006 14:48:27	53307.0	59.5	7.54	7.458	0.541	-0.26656
12/12/2006 14:48:27	53307.5	60.0	7.54	7.466	0.534	-0.27285
12/12/2006 14:48:28	53308.0	60.5	7.56	7.477	0.523	-0.28172
12/12/2006 14:48:28	53308.5	61.0	7.56	7.486	0.514	-0.28908
12/12/2006 14:48:29	53309.0	61.5	7.57	7.495	0.505	-0.29656
12/12/2006 14:48:29	53309.5	62.0	7.58	7.505	0.494	-0.30593
12/12/2006 14:48:30	53310.0	62.5	7.59	7.512	0.488	-0.31193
12/12/2006 14:48:30	53310.5	63.0	7.6	7.518	0.482	-0.31711
12/12/2006 14:48:31	53311.0	63.5	7.61	7.527	0.473	-0.32510
12/12/2006 14:48:31	53311.5	64.0	7.62	7.535	0.464	-0.33324
12/12/2006 14:48:32	53312.0	64.5	7.62	7.542	0.457	-0.33963
12/12/2006 14:48:32	53312.5	65.0	7.63	7.551	0.449	-0.34805
12/12/2006 14:48:33	53313.0	65.5	7.64	7.555	0.445	-0.35172
12/12/2006 14:48:33	53313.5	66.0	7.64	7.562	0.438	-0.35839
12/12/2006 14:48:34	53314.0	66.5	7.65	7.567	0.432	-0.36416
12/12/2006 14:48:34	53314.5	67.0	7.66	7.574	0.426	-0.37103
12/12/2006 14:48:35	53315.0	67.5	7.66	7.580	0.420	-0.37697
12/12/2006 14:48:35	53315.5	68.0	7.67	7.585	0.415	-0.38195
12/12/2006 14:48:36	53316.0	68.5	7.67	7.591	0.408	-0.38910
12/12/2006 14:48:36	53316.5	69.0	7.68	7.595	0.404	-0.39315
12/12/2006 14:48:37	53317.0	69.5	7.68	7.599	0.401	-0.39723
12/12/2006 14:48:37	53317.5	70.0	7.69	7.604	0.396	-0.40244
12/12/2006 14:48:38	53318.0	70.5	7.69	7.606	0.394	-0.40440
12/12/2006 14:48:38	53318.5	71.0	7.69	7.607	0.392	-0.40637

Slug Test P3-15S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:48:39	53319.0	71.5	7.7	7.612	0.388	-0.41169
12/12/2006 14:48:39	53319.5	72.0	7.7	7.614	0.386	-0.41370
12/12/2006 14:48:40	53320.0	72.5	7.7	7.616	0.384	-0.41571
12/12/2006 14:48:40	53320.5	73.0	7.7	7.618	0.382	-0.41773
12/12/2006 14:48:41	53321.0	73.5	7.71	7.622	0.377	-0.42320
12/12/2006 14:48:42	53322.0	74.5	7.71	7.624	0.376	-0.42500
12/12/2006 14:48:42	53322.5	75.0	7.71	7.626	0.374	-0.42706
12/12/2006 14:48:43	53323.0	75.5	7.71	7.627	0.372	-0.42914
12/12/2006 14:48:44	53324.0	76.5	7.71	7.629	0.371	-0.43097
12/12/2006 14:48:44	53324.5	77.0	7.72	7.631	0.369	-0.43306
12/12/2006 14:48:45	53325.5	78.0	7.72	7.633	0.366	-0.43609
12/12/2006 14:48:46	53326.0	78.5	7.72	7.635	0.365	-0.43821
12/12/2006 14:48:46	53326.5	79.0	7.72	7.637	0.363	-0.44033
12/12/2006 14:48:47	53327.5	80.0	7.73	7.638	0.361	-0.44221
12/12/2006 14:48:48	53328.0	80.5	7.73	7.641	0.358	-0.44557
12/12/2006 14:48:49	53329.0	81.5	7.73	7.643	0.357	-0.44747
12/12/2006 14:48:50	53330.0	82.5	7.73	7.644	0.355	-0.44937
12/12/2006 14:48:50	53330.5	83.0	7.73	7.646	0.354	-0.45156
12/12/2006 14:48:52	53332.0	84.5	7.74	7.647	0.352	-0.45321
12/12/2006 14:48:53	53333.5	86.0	7.74	7.649	0.351	-0.45488
12/12/2006 14:48:54	53334.5	87.0	7.74	7.651	0.348	-0.45806
12/12/2006 14:48:56	53336.0	88.5	7.74	7.653	0.347	-0.45974
12/12/2006 14:48:56	53336.5	89.0	7.75	7.655	0.345	-0.46198
12/12/2006 14:48:58	53338.0	90.5	7.75	7.656	0.344	-0.46368
12/12/2006 14:48:59	53339.5	92.0	7.75	7.657	0.342	-0.46538
12/12/2006 14:49:00	53340.0	92.5	7.75	7.660	0.340	-0.46892
12/12/2006 14:49:00	53340.5	93.0	7.75	7.657	0.343	-0.46483
12/12/2006 14:49:01	53341.5	94.0	7.75	7.658	0.341	-0.46682
12/12/2006 14:49:03	53343.5	96.0	7.75	7.660	0.339	-0.46953
12/12/2006 14:49:04	53344.5	97.0	7.76	7.662	0.338	-0.47154
12/12/2006 14:49:06	53346.5	99.0	7.76	7.663	0.337	-0.47299
12/12/2006 14:49:07	53347.5	100.0	7.76	7.665	0.335	-0.47502
12/12/2006 14:49:09	53349.5	102.0	7.76	7.666	0.334	-0.47648
12/12/2006 14:49:10	53350.0	102.5	7.76	7.664	0.336	-0.47360
12/12/2006 14:49:10	53350.5	103.0	7.76	7.665	0.334	-0.47591
12/12/2006 14:49:11	53351.0	103.5	7.77	7.668	0.331	-0.47954
12/12/2006 14:49:13	53353.0	105.5	7.77	7.669	0.330	-0.48102
12/12/2006 14:49:14	53354.5	107.0	7.77	7.671	0.329	-0.48280
12/12/2006 14:49:16	53356.5	109.0	7.77	7.670	0.330	-0.48165
12/12/2006 14:49:17	53357.0	109.5	7.77	7.672	0.328	-0.48400
12/12/2006 14:49:18	53358.5	111.0	7.77	7.673	0.327	-0.48579
12/12/2006 14:49:19	53359.0	111.5	7.77	7.671	0.329	-0.48285
12/12/2006 14:49:19	53359.5	112.0	7.77	7.673	0.327	-0.48521
12/12/2006 14:49:21	53361.5	114.0	7.78	7.674	0.326	-0.48671
12/12/2006 14:49:23	53363.5	116.0	7.78	7.673	0.327	-0.48555
12/12/2006 14:49:24	53364.0	116.5	7.78	7.676	0.324	-0.48926
12/12/2006 14:49:24	53364.5	117.0	7.78	7.674	0.325	-0.48763
12/12/2006 14:49:25	53365.0	117.5	7.78	7.675	0.325	-0.48868
12/12/2006 14:49:25	53365.5	118.0	7.78	7.674	0.326	-0.48705

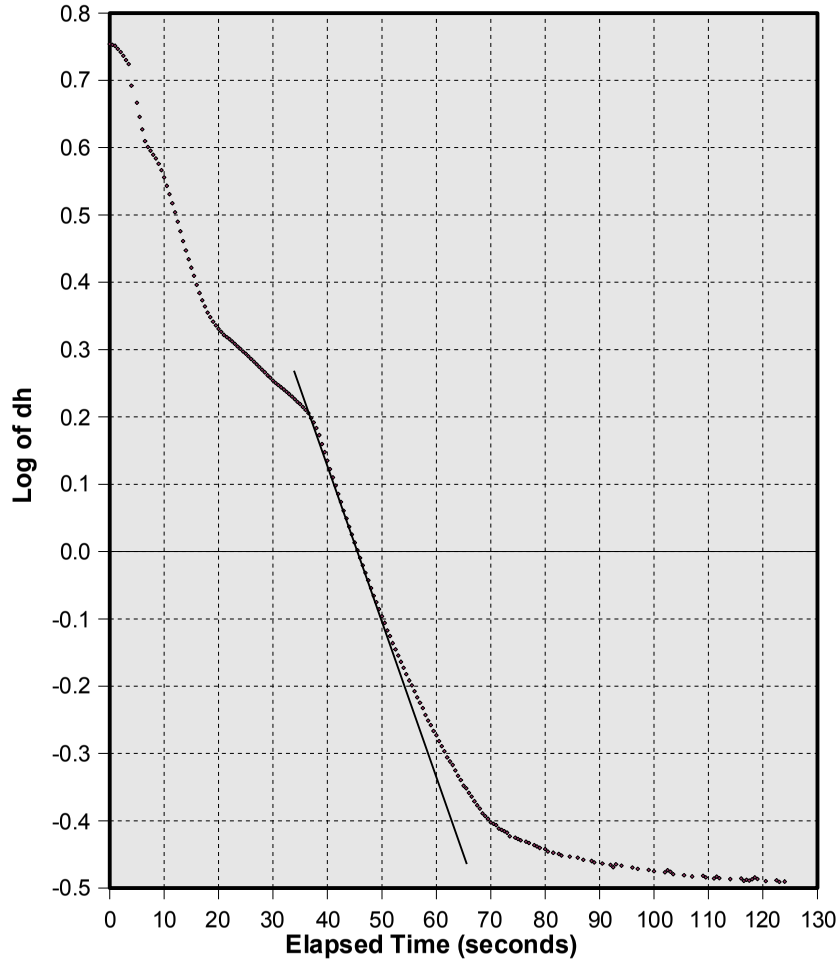
Slug Test P3-15S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:49:26	53366.0	118.5	7.78	7.672	0.328	-0.48410
12/12/2006 14:49:26	53366.5	119.0	7.78	7.673	0.326	-0.48647
12/12/2006 14:49:28	53368.0	120.5	7.78	7.676	0.324	-0.48960
12/12/2006 14:49:30	53370.0	122.5	7.78	7.675	0.325	-0.48844
12/12/2006 14:49:30	53370.5	123.0	7.78	7.677	0.323	-0.49083
12/12/2006 14:49:31	53371.5	124.0	7.78	7.676	0.323	-0.49024

Slug Test P3-15S

Slug Test by Bouwer and Rice

Displacement Method:	Pump	
Well depth:	16.53	ft
Stick up height:	3.09	ft
Depth to sand pack (BGS):	5.50	ft
Depth to screened interval (BGS):	6.53	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	9.57	ft
Initial Head Change:	5.67	ft
Total well length:	19.62	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.2061	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	1.66	ft
Drawdown at time = t (y_t):	0.78	ft
Elapsed Time between y_0 and y_t (t):	15.5	sec
Initial water column in well (L_w):	10.05	ft
$\ln(R_e/r_w)$ =	2.09	
K =	2.15E-04	ft/sec
	6.55E-03	**cm/sec**
	6773.66	ft/yr



Water above sand pack:	No
%Duration below sand pack:	100.00%
Water above screen:	No
%Duration below screen:	99.12%

Slug Test P3-15D

Initial offset in logger reading (feet):	0.117	Date:	12/12/2006
Offset increment in logger reading (feet/sec):	0.000006		
Initial depth to water table (feet):	9.35		
Depth of probe below water table (feet):	2.352		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 13:59:42	50382.5	0.0	10.49	10.372	8.020	0.90420
12/12/2006 13:59:43	50383.5	1.0	10.35	10.230	7.878	0.89644
12/12/2006 13:59:44	50384.0	1.5	10.26	10.137	7.785	0.89128
12/12/2006 13:59:45	50385.0	2.5	10.16	10.037	7.685	0.88567
12/12/2006 13:59:46	50386.0	3.5	10.05	9.931	7.579	0.87964
12/12/2006 13:59:47	50387.0	4.5	9.95	9.834	7.482	0.87404
12/12/2006 13:59:48	50388.0	5.5	9.86	9.745	7.393	0.86885
12/12/2006 13:59:49	50389.5	7.0	9.74	9.619	7.267	0.86138
12/12/2006 13:59:51	50391.0	8.5	9.63	9.508	7.156	0.85469
12/12/2006 13:59:52	50392.5	10.0	9.52	9.401	7.049	0.84815
12/12/2006 13:59:54	50394.0	11.5	9.42	9.303	6.951	0.84207
12/12/2006 13:59:55	50395.5	13.0	9.33	9.209	6.857	0.83616
12/12/2006 13:59:57	50397.0	14.5	9.24	9.122	6.770	0.83061
12/12/2006 13:59:58	50398.5	16.0	9.16	9.037	6.685	0.82512
12/12/2006 14:00:00	50400.0	17.5	9.08	8.957	6.605	0.81990
12/12/2006 14:00:01	50401.5	19.0	9	8.878	6.526	0.81467
12/12/2006 14:00:03	50403.5	21.0	8.9	8.780	6.428	0.80810
12/12/2006 14:00:05	50405.5	23.0	8.8	8.686	6.334	0.80170
12/12/2006 14:00:07	50407.5	25.0	8.71	8.596	6.244	0.79548
12/12/2006 14:00:09	50409.5	27.0	8.63	8.511	6.159	0.78953
12/12/2006 14:00:11	50411.5	29.0	8.55	8.430	6.078	0.78378
12/12/2006 14:00:13	50413.5	31.0	8.47	8.352	6.000	0.77817
12/12/2006 14:00:15	50415.5	33.0	8.39	8.276	5.924	0.77263
12/12/2006 14:00:17	50417.5	35.0	8.32	8.201	5.849	0.76710
12/12/2006 14:00:19	50419.5	37.0	8.25	8.132	5.780	0.76195
12/12/2006 14:00:21	50421.5	39.0	8.18	8.065	5.713	0.75688
12/12/2006 14:00:23	50423.5	41.0	8.12	7.997	5.645	0.75168
12/12/2006 14:00:26	50426.0	43.5	8.04	7.919	5.567	0.74564
12/12/2006 14:00:28	50428.5	46.0	7.96	7.842	5.490	0.73959
12/12/2006 14:00:31	50431.0	48.5	7.89	7.768	5.416	0.73369
12/12/2006 14:00:33	50433.5	51.0	7.82	7.699	5.347	0.72812
12/12/2006 14:00:36	50436.0	53.5	7.75	7.629	5.277	0.72240
12/12/2006 14:00:38	50438.5	56.0	7.68	7.562	5.210	0.71685
12/12/2006 14:00:41	50441.0	58.5	7.62	7.499	5.147	0.71156
12/12/2006 14:00:43	50443.5	61.0	7.55	7.436	5.084	0.70621
12/12/2006 14:00:46	50446.0	63.5	7.49	7.375	5.023	0.70097
12/12/2006 14:00:48	50448.5	66.0	7.43	7.315	4.963	0.69575
12/12/2006 14:00:51	50451.5	69.0	7.37	7.248	4.896	0.68985
12/12/2006 14:00:54	50454.5	72.0	7.3	7.180	4.828	0.68377
12/12/2006 14:00:57	50457.5	75.0	7.24	7.117	4.765	0.67806
12/12/2006 14:01:00	50460.5	78.0	7.17	7.055	4.703	0.67237
12/12/2006 14:01:03	50463.5	81.0	7.11	6.992	4.640	0.66652
12/12/2006 14:01:06	50466.5	84.0	7.05	6.933	4.582	0.66105
12/12/2006 14:01:09	50469.5	87.0	6.99	6.874	4.523	0.65542

Slug Test P3-15D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:01:12	50472.5	90.0	6.94	6.818	4.467	0.65001
12/12/2006 14:01:15	50475.5	93.0	6.88	6.765	4.414	0.64482
12/12/2006 14:01:18	50478.5	96.0	6.83	6.711	4.360	0.63947
12/12/2006 14:01:21	50481.5	99.0	6.78	6.659	4.308	0.63426
12/12/2006 14:01:25	50485.0	102.5	6.72	6.601	4.250	0.62837
12/12/2006 14:01:28	50488.0	105.5	6.67	6.552	4.201	0.62333
12/12/2006 14:01:31	50491.5	109.0	6.62	6.496	4.145	0.61750
12/12/2006 14:01:35	50495.0	112.5	6.56	6.443	4.092	0.61191
12/12/2006 14:01:38	50498.5	116.0	6.51	6.389	4.038	0.60614
12/12/2006 14:01:42	50502.0	119.5	6.46	6.340	3.989	0.60084
12/12/2006 14:01:45	50505.5	123.0	6.41	6.288	3.937	0.59513
12/12/2006 14:01:49	50509.0	126.5	6.36	6.242	3.891	0.59003
12/12/2006 14:01:52	50512.5	130.0	6.31	6.193	3.842	0.58452
12/12/2006 14:01:56	50516.0	133.5	6.26	6.145	3.794	0.57906
12/12/2006 14:01:59	50519.5	137.0	6.22	6.101	3.750	0.57399
12/12/2006 14:02:03	50523.0	140.5	6.18	6.056	3.705	0.56874
12/12/2006 14:02:07	50527.0	144.5	6.13	6.007	3.656	0.56296
12/12/2006 14:02:10	50530.5	148.0	6.08	5.965	3.614	0.55794
12/12/2006 14:02:14	50534.5	152.0	6.04	5.918	3.567	0.55225
12/12/2006 14:02:18	50538.5	156.0	5.99	5.874	3.523	0.54685
12/12/2006 14:02:22	50542.0	159.5	5.95	5.833	3.482	0.54177
12/12/2006 14:02:26	50546.0	163.5	5.91	5.791	3.439	0.53649
12/12/2006 14:02:30	50550.0	167.5	5.87	5.747	3.395	0.53090
12/12/2006 14:02:34	50554.0	171.5	5.83	5.707	3.355	0.52575
12/12/2006 14:02:38	50558.0	175.5	5.79	5.667	3.315	0.52054
12/12/2006 14:02:42	50562.0	179.5	5.75	5.627	3.275	0.51526
12/12/2006 14:02:46	50566.0	183.5	5.71	5.587	3.235	0.50992
12/12/2006 14:02:50	50570.5	188.0	5.66	5.544	3.192	0.50411
12/12/2006 14:02:55	50575.0	192.5	5.62	5.502	3.150	0.49835
12/12/2006 14:02:59	50579.5	197.0	5.58	5.462	3.110	0.49280
12/12/2006 14:03:04	50584.0	201.5	5.54	5.422	3.070	0.48717
12/12/2006 14:03:08	50588.5	206.0	5.5	5.385	3.033	0.48190
12/12/2006 14:03:13	50593.0	210.5	5.47	5.347	2.995	0.47643
12/12/2006 14:03:17	50597.5	215.0	5.43	5.309	2.957	0.47088
12/12/2006 14:03:22	50602.0	219.5	5.39	5.273	2.921	0.46555
12/12/2006 14:03:26	50606.5	224.0	5.36	5.238	2.886	0.46031
12/12/2006 14:03:31	50611.5	229.0	5.32	5.200	2.848	0.45455
12/12/2006 14:03:36	50616.0	233.5	5.29	5.167	2.815	0.44949
12/12/2006 14:03:40	50620.5	238.0	5.25	5.134	2.782	0.44436
12/12/2006 14:03:45	50625.0	242.5	5.22	5.101	2.749	0.43918
12/12/2006 14:03:50	50630.0	247.5	5.19	5.067	2.715	0.43377
12/12/2006 14:03:55	50635.0	252.5	5.15	5.031	2.680	0.42813
12/12/2006 14:03:59	50639.5	257.0	5.12	5.000	2.649	0.42307
12/12/2006 14:04:04	50644.5	262.0	5.09	4.969	2.618	0.41795
12/12/2006 14:04:09	50649.0	266.5	5.06	4.939	2.588	0.41294
12/12/2006 14:04:14	50654.0	271.5	5.03	4.908	2.557	0.40770
12/12/2006 14:04:19	50659.0	276.5	5	4.877	2.526	0.40240
12/12/2006 14:04:23	50663.5	281.0	4.97	4.848	2.497	0.39738
12/12/2006 14:04:28	50668.5	286.0	4.94	4.819	2.468	0.39230

Slug Test P3-15D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:04:33	50673.5	291.0	4.91	4.790	2.439	0.38716
12/12/2006 14:04:38	50678.5	296.0	4.88	4.762	2.411	0.38214
12/12/2006 14:04:44	50684.0	301.5	4.85	4.733	2.382	0.37688
12/12/2006 14:04:49	50689.5	307.0	4.82	4.702	2.351	0.37118
12/12/2006 14:04:55	50695.0	312.5	4.79	4.674	2.323	0.36597
12/12/2006 14:05:00	50700.0	317.5	4.77	4.647	2.296	0.36089
12/12/2006 14:05:05	50705.5	323.0	4.74	4.618	2.267	0.35536
12/12/2006 14:05:10	50710.5	328.0	4.71	4.592	2.240	0.35034
12/12/2006 14:05:16	50716.0	333.5	4.69	4.566	2.214	0.34527
12/12/2006 14:05:21	50721.5	339.0	4.66	4.539	2.187	0.33993
12/12/2006 14:05:27	50727.0	344.5	4.63	4.513	2.161	0.33473
12/12/2006 14:05:32	50732.5	350.0	4.61	4.488	2.136	0.32968
12/12/2006 14:05:38	50738.5	356.0	4.58	4.460	2.108	0.32394
12/12/2006 14:05:45	50745.0	362.5	4.55	4.433	2.081	0.31833
12/12/2006 14:05:50	50750.0	367.5	4.53	4.409	2.057	0.31329
12/12/2006 14:05:56	50756.0	373.5	4.51	4.385	2.033	0.30818
12/12/2006 14:06:02	50762.0	379.5	4.48	4.361	2.009	0.30302
12/12/2006 14:06:08	50768.0	385.5	4.45	4.334	1.982	0.29714
12/12/2006 14:06:14	50774.0	391.5	4.43	4.310	1.958	0.29184
12/12/2006 14:06:20	50780.5	398.0	4.41	4.286	1.934	0.28647
12/12/2006 14:06:26	50786.5	404.0	4.38	4.262	1.910	0.28104
12/12/2006 14:06:32	50792.5	410.0	4.36	4.240	1.888	0.27600
12/12/2006 14:06:38	50798.5	416.0	4.34	4.218	1.866	0.27090
12/12/2006 14:06:44	50804.5	422.0	4.32	4.195	1.844	0.26575
12/12/2006 14:06:50	50810.5	428.0	4.29	4.173	1.822	0.26052
12/12/2006 14:06:57	50817.0	434.5	4.27	4.151	1.800	0.25524
12/12/2006 14:07:03	50823.5	441.0	4.25	4.129	1.778	0.24989
12/12/2006 14:07:10	50830.0	447.5	4.23	4.107	1.756	0.24447
12/12/2006 14:07:16	50836.5	454.0	4.21	4.085	1.734	0.23898
12/12/2006 14:07:23	50843.0	460.5	4.19	4.065	1.714	0.23394
12/12/2006 14:07:29	50849.5	467.0	4.16	4.043	1.692	0.22831
12/12/2006 14:07:35	50855.5	473.0	4.14	4.023	1.672	0.22314
12/12/2006 14:07:43	50863.0	480.5	4.12	4.002	1.651	0.21764
12/12/2006 14:07:49	50869.5	487.0	4.1	3.982	1.631	0.21233
12/12/2006 14:07:56	50876.0	493.5	4.08	3.962	1.611	0.20696
12/12/2006 14:08:03	50883.0	500.5	4.06	3.943	1.591	0.20180
12/12/2006 14:08:10	50890.5	508.0	4.04	3.923	1.571	0.19629
12/12/2006 14:08:16	50896.0	513.5	4.03	3.905	1.553	0.19128
12/12/2006 14:08:23	50903.5	521.0	4.01	3.886	1.534	0.18592
12/12/2006 14:08:30	50910.0	527.5	3.99	3.868	1.516	0.18079
12/12/2006 14:08:37	50917.5	535.0	3.97	3.848	1.496	0.17501
12/12/2006 14:08:45	50925.5	543.0	3.95	3.829	1.477	0.16944
12/12/2006 14:08:52	50932.0	549.5	3.93	3.811	1.459	0.16411
12/12/2006 14:08:59	50939.0	556.5	3.92	3.794	1.442	0.15900
12/12/2006 14:09:06	50946.5	564.0	3.9	3.776	1.424	0.15354
12/12/2006 14:09:14	50954.0	571.5	3.88	3.759	1.407	0.14831
12/12/2006 14:09:21	50961.0	578.5	3.86	3.741	1.389	0.14270
12/12/2006 14:09:28	50968.5	586.0	3.85	3.723	1.372	0.13734
12/12/2006 14:09:36	50976.5	594.0	3.83	3.705	1.354	0.13159

Slug Test P3-15D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:09:44	50984.0	601.5	3.81	3.688	1.337	0.12609
12/12/2006 14:09:52	50992.0	609.5	3.79	3.670	1.319	0.12018
12/12/2006 14:10:01	51001.0	618.5	3.78	3.653	1.302	0.11453
12/12/2006 14:10:08	51008.0	625.5	3.76	3.638	1.287	0.10948
12/12/2006 14:10:15	51015.5	633.0	3.75	3.623	1.272	0.10438
12/12/2006 14:10:22	51022.5	640.0	3.73	3.608	1.257	0.09921
12/12/2006 14:10:30	51030.0	647.5	3.71	3.592	1.241	0.09363
12/12/2006 14:10:38	51038.5	656.0	3.7	3.577	1.226	0.08833
12/12/2006 14:10:46	51046.5	664.0	3.68	3.562	1.210	0.08296
12/12/2006 14:10:54	51054.5	672.0	3.67	3.547	1.195	0.07753
12/12/2006 14:11:02	51062.5	680.0	3.65	3.531	1.179	0.07166
12/12/2006 14:11:11	51071.0	688.5	3.64	3.516	1.164	0.06608
12/12/2006 14:11:19	51079.5	697.0	3.62	3.501	1.149	0.06043
12/12/2006 14:11:28	51088.0	705.5	3.61	3.486	1.134	0.05470
12/12/2006 14:11:35	51095.5	713.0	3.6	3.473	1.121	0.04968
12/12/2006 14:11:43	51103.5	721.0	3.58	3.460	1.108	0.04460
12/12/2006 14:11:52	51112.0	729.5	3.57	3.447	1.095	0.03945
12/12/2006 14:11:59	51119.5	737.0	3.56	3.434	1.082	0.03425
12/12/2006 14:12:07	51127.5	745.0	3.54	3.421	1.069	0.02898
12/12/2006 14:12:15	51135.5	753.0	3.53	3.407	1.056	0.02365
12/12/2006 14:12:24	51144.0	761.5	3.52	3.394	1.043	0.01824
12/12/2006 14:12:33	51153.0	770.5	3.5	3.381	1.030	0.01277
12/12/2006 14:12:41	51161.5	779.0	3.49	3.368	1.017	0.00724
12/12/2006 14:12:50	51170.5	788.0	3.48	3.355	1.004	0.00162
12/12/2006 14:13:00	51180.0	797.5	3.47	3.342	0.991	-0.00406
12/12/2006 14:13:09	51189.5	807.0	3.45	3.329	0.978	-0.00982
12/12/2006 14:13:19	51199.0	816.5	3.44	3.316	0.965	-0.01566
12/12/2006 14:13:27	51207.0	824.5	3.43	3.305	0.954	-0.02067
12/12/2006 14:13:35	51215.0	832.5	3.42	3.294	0.942	-0.02573
12/12/2006 14:13:43	51223.5	841.0	3.41	3.283	0.931	-0.03085
12/12/2006 14:13:52	51232.0	849.5	3.4	3.272	0.920	-0.03603
12/12/2006 14:14:02	51242.0	859.5	3.38	3.259	0.907	-0.04224
12/12/2006 14:14:13	51253.0	870.5	3.37	3.246	0.894	-0.04854
12/12/2006 14:14:21	51261.5	879.0	3.36	3.235	0.883	-0.05394
12/12/2006 14:14:33	51273.0	890.5	3.35	3.222	0.870	-0.06041
12/12/2006 14:14:42	51282.0	899.5	3.34	3.212	0.860	-0.06546
12/12/2006 14:14:51	51291.5	909.0	3.32	3.201	0.849	-0.07108
12/12/2006 14:15:00	51300.5	918.0	3.31	3.190	0.838	-0.07677
12/12/2006 14:15:10	51310.5	928.0	3.3	3.178	0.827	-0.08254
12/12/2006 14:15:20	51320.5	938.0	3.29	3.167	0.816	-0.08839
12/12/2006 14:15:30	51330.5	948.0	3.28	3.157	0.806	-0.09378
12/12/2006 14:15:40	51340.0	957.5	3.27	3.146	0.795	-0.09978
12/12/2006 14:15:50	51350.5	968.0	3.26	3.135	0.784	-0.10587
12/12/2006 14:16:01	51361.0	978.5	3.25	3.125	0.774	-0.11148
12/12/2006 14:16:09	51369.0	986.5	3.24	3.116	0.765	-0.11659
12/12/2006 14:16:21	51381.5	999.0	3.23	3.105	0.753	-0.12293
12/12/2006 14:16:33	51393.0	1010.5	3.22	3.095	0.743	-0.12877
12/12/2006 14:16:42	51402.0	1019.5	3.21	3.086	0.734	-0.13409
12/12/2006 14:16:50	51410.5	1028.0	3.2	3.077	0.725	-0.13947

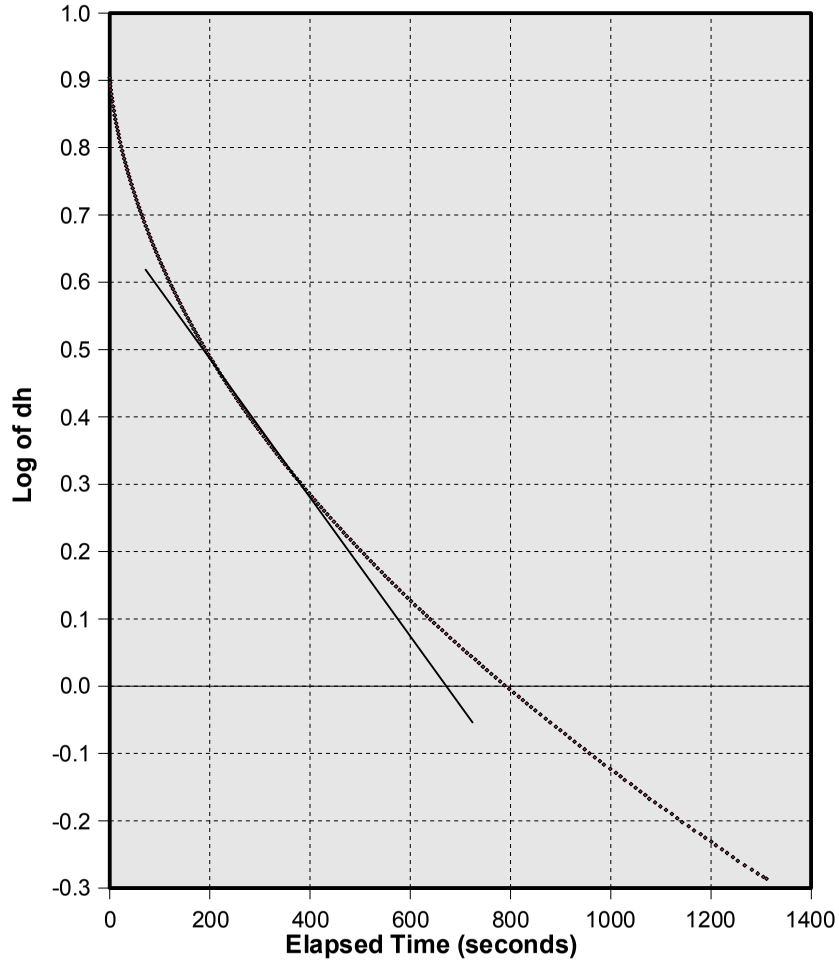
Slug Test P3-15D

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
12/12/2006 14:17:03	51423.0	1040.5	3.19	3.067	0.715	-0.14555
12/12/2006 14:17:12	51432.0	1049.5	3.18	3.058	0.706	-0.15108
12/12/2006 14:17:21	51441.5	1059.0	3.17	3.049	0.697	-0.15669
12/12/2006 14:17:31	51451.5	1069.0	3.17	3.041	0.689	-0.16174
12/12/2006 14:17:39	51459.5	1077.0	3.16	3.032	0.680	-0.16748
12/12/2006 14:17:51	51471.0	1088.5	3.15	3.023	0.672	-0.17266
12/12/2006 14:18:01	51481.5	1099.0	3.14	3.014	0.663	-0.17856
12/12/2006 14:18:13	51493.0	1110.5	3.13	3.006	0.655	-0.18388
12/12/2006 14:18:24	51504.5	1122.0	3.12	2.997	0.646	-0.18994
12/12/2006 14:18:35	51515.0	1132.5	3.11	2.988	0.637	-0.19607
12/12/2006 14:18:45	51525.0	1142.5	3.1	2.979	0.628	-0.20230
12/12/2006 14:18:58	51538.0	1155.5	3.1	2.971	0.620	-0.20792
12/12/2006 14:19:08	51548.5	1166.0	3.09	2.962	0.610	-0.21432
12/12/2006 14:19:22	51562.0	1179.5	3.08	2.954	0.602	-0.22011
12/12/2006 14:19:31	51571.0	1188.5	3.07	2.947	0.595	-0.22523
12/12/2006 14:19:43	51583.0	1200.5	3.06	2.939	0.587	-0.23115
12/12/2006 14:19:52	51592.0	1209.5	3.06	2.932	0.580	-0.23640
12/12/2006 14:20:04	51604.5	1222.0	3.05	2.924	0.572	-0.24249
12/12/2006 14:20:14	51614.5	1232.0	3.04	2.917	0.565	-0.24788
12/12/2006 14:20:26	51626.5	1244.0	3.03	2.909	0.557	-0.25413
12/12/2006 14:20:36	51636.0	1253.5	3.03	2.902	0.550	-0.25966
12/12/2006 14:20:50	51650.0	1267.5	3.02	2.893	0.542	-0.26610
12/12/2006 14:21:04	51664.0	1281.5	3.01	2.885	0.534	-0.27262
12/12/2006 14:21:16	51676.0	1293.5	3	2.878	0.527	-0.27842
12/12/2006 14:21:27	51687.0	1304.5	3	2.872	0.521	-0.28345
12/12/2006 14:21:33	51693.5	1311.0	3	2.869	0.518	-0.28599

Slug Test P3-15D

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	34.49	ft
Stick up height:	3.26	ft
Depth to sand pack (BGS):	23.50	ft
Depth to screened interval (BGS):	24.29	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	9.35	ft
Initial Head Change:	8.02	ft
Total well length:	37.75	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.20	ft
Length of open section (L_e):	10.20	ft
L_e / r_w:	28.8000	
C (dimensionless):	2.056	
Drawdown at time = 0 (y_0):	3.29	ft
Drawdown at time = t (y_t):	1.94	ft
Elapsed Time between y_0 and y_t (t):	218.5	sec
Initial water column in well (L_w):	28.40	ft
$\ln(R_e/r_w)$ =	3.10	
K =	2.56E-06	ft/sec
	7.79E-05	**cm/sec**
	80.64	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-16

Initial offset in logger reading (feet):	-0.014	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	-0.000062		
Initial depth to water table (feet):	7.16		
Depth of probe below water table (feet):	5.130		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:11:24	54684.0	0.0	11.11	11.133	6.003	0.77837
2/21/2007 15:11:25	54685.0	1.0	10.83	10.848	5.718	0.75725
2/21/2007 15:11:27	54687.0	3.0	10.65	10.669	5.539	0.74344
2/21/2007 15:11:28	54688.5	4.5	10.48	10.505	5.375	0.73040
2/21/2007 15:11:30	54690.0	6.0	10.32	10.345	5.215	0.71728
2/21/2007 15:11:31	54691.5	7.5	10.17	10.192	5.062	0.70436
2/21/2007 15:11:33	54693.0	9.0	10.02	10.046	4.917	0.69166
2/21/2007 15:11:34	54694.5	10.5	9.89	9.908	4.779	0.67930
2/21/2007 15:11:36	54696.0	12.0	9.75	9.771	4.642	0.66668
2/21/2007 15:11:37	54697.5	13.5	9.62	9.642	4.513	0.65444
2/21/2007 15:11:39	54699.0	15.0	9.5	9.520	4.391	0.64255
2/21/2007 15:11:40	54700.5	16.5	9.38	9.403	4.273	0.63073
2/21/2007 15:11:42	54702.0	18.0	9.26	9.286	4.156	0.61868
2/21/2007 15:11:43	54703.5	19.5	9.15	9.178	4.048	0.60726
2/21/2007 15:11:45	54705.0	21.0	9.05	9.070	3.940	0.59552
2/21/2007 15:11:46	54706.5	22.5	8.94	8.966	3.836	0.58392
2/21/2007 15:11:48	54708.0	24.0	8.85	8.870	3.740	0.57292
2/21/2007 15:11:49	54709.5	25.5	8.75	8.774	3.645	0.56164
2/21/2007 15:11:51	54711.0	27.0	8.66	8.680	3.551	0.55030
2/21/2007 15:11:52	54712.5	28.5	8.57	8.593	3.464	0.53954
2/21/2007 15:11:54	54714.0	30.0	8.48	8.503	3.374	0.52812
2/21/2007 15:11:55	54715.5	31.5	8.4	8.421	3.292	0.51745
2/21/2007 15:11:57	54717.0	33.0	8.32	8.340	3.210	0.50650
2/21/2007 15:11:58	54718.5	34.5	8.23	8.258	3.128	0.49528
2/21/2007 15:12:00	54720.0	36.0	8.16	8.183	3.053	0.48475
2/21/2007 15:12:01	54721.5	37.5	8.08	8.105	2.975	0.47353
2/21/2007 15:12:03	54723.0	39.0	8.01	8.032	2.902	0.46275
2/21/2007 15:12:04	54724.5	40.5	7.94	7.964	2.834	0.45247
2/21/2007 15:12:06	54726.0	42.0	7.87	7.894	2.765	0.44162
2/21/2007 15:12:07	54727.5	43.5	7.8	7.828	2.699	0.43114
2/21/2007 15:12:09	54729.0	45.0	7.74	7.764	2.635	0.42074
2/21/2007 15:12:10	54730.5	46.5	7.68	7.701	2.572	0.41024
2/21/2007 15:12:12	54732.0	48.0	7.62	7.640	2.511	0.39983
2/21/2007 15:12:13	54733.5	49.5	7.56	7.582	2.452	0.38952
2/21/2007 15:12:15	54735.0	51.0	7.5	7.521	2.391	0.37860
2/21/2007 15:12:16	54736.5	52.5	7.44	7.464	2.334	0.36814
2/21/2007 15:12:18	54738.5	54.5	7.37	7.394	2.264	0.35494
2/21/2007 15:12:20	54740.0	56.0	7.32	7.342	2.212	0.34487
2/21/2007 15:12:21	54741.5	57.5	7.27	7.291	2.162	0.33476
2/21/2007 15:12:23	54743.0	59.0	7.22	7.241	2.112	0.32461
2/21/2007 15:12:24	54744.5	60.5	7.17	7.192	2.063	0.31443
2/21/2007 15:12:26	54746.5	62.5	7.1	7.130	2.001	0.30121
2/21/2007 15:12:28	54748.5	64.5	7.04	7.067	1.938	0.28734
2/21/2007 15:12:30	54750.5	66.5	6.98	7.011	1.881	0.27440

Slug Test P3-16

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:12:32	54752.5	68.5	6.93	6.955	1.825	0.26131
2/21/2007 15:12:34	54754.0	70.0	6.89	6.912	1.782	0.25097
2/21/2007 15:12:35	54755.5	71.5	6.84	6.870	1.740	0.24064
2/21/2007 15:12:37	54757.5	73.5	6.8	6.823	1.693	0.22878
2/21/2007 15:12:39	54759.5	75.5	6.75	6.773	1.644	0.21580
2/21/2007 15:12:41	54761.0	77.0	6.71	6.735	1.606	0.20567
2/21/2007 15:12:43	54763.0	79.0	6.66	6.686	1.557	0.19224
2/21/2007 15:12:45	54765.0	81.0	6.62	6.644	1.514	0.18011
2/21/2007 15:12:47	54767.0	83.0	6.57	6.599	1.469	0.16704
2/21/2007 15:12:49	54769.0	85.0	6.53	6.558	1.428	0.15479
2/21/2007 15:12:51	54771.0	87.0	6.49	6.516	1.386	0.14186
2/21/2007 15:12:53	54773.0	89.0	6.45	6.478	1.348	0.12983
2/21/2007 15:12:55	54775.0	91.0	6.41	6.439	1.310	0.11713
2/21/2007 15:12:57	54777.0	93.0	6.37	6.401	1.272	0.10438
2/21/2007 15:12:59	54779.0	95.0	6.34	6.365	1.236	0.09195
2/21/2007 15:13:01	54781.0	97.0	6.31	6.334	1.205	0.08096
2/21/2007 15:13:03	54783.0	99.0	6.27	6.302	1.172	0.06895
2/21/2007 15:13:05	54785.0	101.0	6.24	6.271	1.141	0.05736
2/21/2007 15:13:07	54787.0	103.0	6.21	6.240	1.110	0.04544
2/21/2007 15:13:09	54789.0	105.0	6.18	6.209	1.079	0.03320
2/21/2007 15:13:11	54791.0	107.0	6.15	6.178	1.049	0.02059
2/21/2007 15:13:13	54793.0	109.0	6.12	6.149	1.020	0.00846
2/21/2007 15:13:15	54795.0	111.0	6.09	6.123	0.994	-0.00270
2/21/2007 15:13:17	54797.0	113.0	6.07	6.096	0.967	-0.01461
2/21/2007 15:13:19	54799.0	115.0	6.04	6.071	0.941	-0.02639
2/21/2007 15:13:21	54801.0	117.0	6.02	6.045	0.915	-0.03850
2/21/2007 15:13:23	54803.0	119.0	5.99	6.023	0.893	-0.04900
2/21/2007 15:13:25	54805.0	121.0	5.97	6.001	0.871	-0.05977
2/21/2007 15:13:27	54807.0	123.0	5.95	5.979	0.850	-0.07082
2/21/2007 15:13:29	54809.0	125.0	5.93	5.955	0.826	-0.08320
2/21/2007 15:13:31	54811.5	127.5	5.9	5.931	0.802	-0.09592
2/21/2007 15:13:33	54813.5	129.5	5.88	5.912	0.782	-0.10682
2/21/2007 15:13:35	54815.5	131.5	5.86	5.890	0.760	-0.11915
2/21/2007 15:13:38	54818.0	134.0	5.84	5.866	0.736	-0.13299
2/21/2007 15:13:40	54820.0	136.0	5.82	5.849	0.719	-0.14306
2/21/2007 15:13:42	54822.0	138.0	5.8	5.832	0.702	-0.15337
2/21/2007 15:13:44	54824.0	140.0	5.78	5.810	0.681	-0.16711
2/21/2007 15:13:46	54826.0	142.0	5.76	5.793	0.664	-0.17802
2/21/2007 15:13:48	54828.0	144.0	5.75	5.776	0.647	-0.18920
2/21/2007 15:13:50	54830.0	146.0	5.73	5.759	0.629	-0.20138
2/21/2007 15:13:52	54832.0	148.0	5.71	5.742	0.612	-0.21319
2/21/2007 15:13:54	54834.0	150.0	5.7	5.727	0.597	-0.22387
2/21/2007 15:13:56	54836.0	152.0	5.68	5.713	0.583	-0.23408
2/21/2007 15:13:58	54838.0	154.0	5.67	5.698	0.568	-0.24530
2/21/2007 15:14:00	54840.5	156.5	5.65	5.683	0.554	-0.25680
2/21/2007 15:14:02	54842.5	158.5	5.64	5.669	0.540	-0.26782
2/21/2007 15:14:04	54844.5	160.5	5.62	5.654	0.525	-0.27996
2/21/2007 15:14:07	54847.0	163.0	5.61	5.640	0.510	-0.29242
2/21/2007 15:14:09	54849.0	165.0	5.6	5.628	0.498	-0.30265

Slug Test P3-16

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:14:10	54850.5	166.5	5.58	5.616	0.486	-0.31316
2/21/2007 15:14:13	54853.0	169.0	5.57	5.604	0.474	-0.32387
2/21/2007 15:14:15	54855.5	171.5	5.56	5.591	0.462	-0.33580
2/21/2007 15:14:17	54857.5	173.5	5.55	5.579	0.450	-0.34712
2/21/2007 15:14:19	54859.5	175.5	5.53	5.567	0.438	-0.35874
2/21/2007 15:14:22	54862.0	178.0	5.52	5.552	0.423	-0.37373
2/21/2007 15:14:24	54864.5	180.5	5.51	5.541	0.411	-0.38606
2/21/2007 15:14:27	54867.0	183.0	5.5	5.531	0.401	-0.39659
2/21/2007 15:14:29	54869.0	185.0	5.49	5.521	0.391	-0.40742
2/21/2007 15:14:31	54871.5	187.5	5.48	5.511	0.382	-0.41848
2/21/2007 15:14:33	54873.0	189.0	5.47	5.502	0.373	-0.42874
2/21/2007 15:14:35	54875.5	191.5	5.46	5.492	0.363	-0.44037
2/21/2007 15:14:38	54878.0	194.0	5.45	5.482	0.353	-0.45232
2/21/2007 15:14:40	54880.0	196.0	5.44	5.473	0.343	-0.46465
2/21/2007 15:14:42	54882.5	198.5	5.43	5.463	0.333	-0.47730
2/21/2007 15:14:45	54885.0	201.0	5.42	5.453	0.323	-0.49032
2/21/2007 15:14:48	54888.0	204.0	5.41	5.443	0.314	-0.50371
2/21/2007 15:14:50	54890.0	206.0	5.4	5.434	0.305	-0.51618
2/21/2007 15:14:52	54892.5	208.5	5.39	5.426	0.297	-0.52751
2/21/2007 15:14:55	54895.0	211.0	5.38	5.420	0.290	-0.53765
2/21/2007 15:14:57	54897.0	213.0	5.38	5.412	0.282	-0.54961
2/21/2007 15:14:59	54899.5	215.5	5.37	5.402	0.272	-0.56504
2/21/2007 15:15:01	54901.5	217.5	5.36	5.395	0.265	-0.57615
2/21/2007 15:15:04	54904.0	220.0	5.35	5.388	0.259	-0.58750
2/21/2007 15:15:07	54907.0	223.0	5.34	5.380	0.251	-0.60083
2/21/2007 15:15:09	54909.0	225.0	5.34	5.373	0.244	-0.61291
2/21/2007 15:15:12	54912.0	228.0	5.33	5.366	0.236	-0.62705
2/21/2007 15:15:15	54915.0	231.0	5.32	5.359	0.229	-0.63978
2/21/2007 15:15:17	54917.0	233.0	5.31	5.351	0.221	-0.65497
2/21/2007 15:15:20	54920.0	236.0	5.31	5.344	0.215	-0.66855
2/21/2007 15:15:23	54923.5	239.5	5.3	5.336	0.207	-0.68460
2/21/2007 15:15:25	54925.0	241.0	5.29	5.331	0.202	-0.69503
2/21/2007 15:15:28	54928.0	244.0	5.29	5.325	0.195	-0.70995
2/21/2007 15:15:31	54931.0	247.0	5.28	5.320	0.190	-0.72081
2/21/2007 15:15:33	54933.5	249.5	5.28	5.315	0.185	-0.73202
2/21/2007 15:15:37	54937.0	253.0	5.27	5.310	0.181	-0.74338
2/21/2007 15:15:39	54939.0	255.0	5.27	5.303	0.174	-0.76024
2/21/2007 15:15:43	54943.0	259.0	5.26	5.298	0.169	-0.77229
2/21/2007 15:15:45	54945.5	261.5	5.26	5.294	0.164	-0.78493
2/21/2007 15:15:48	54948.5	264.5	5.25	5.290	0.160	-0.79515
2/21/2007 15:15:49	54949.5	265.5	5.25	5.285	0.155	-0.80874
2/21/2007 15:15:54	54954.5	270.5	5.24	5.280	0.151	-0.82206
2/21/2007 15:15:57	54957.5	273.5	5.24	5.275	0.146	-0.83617
2/21/2007 15:16:00	54960.0	276.0	5.23	5.271	0.141	-0.85084
2/21/2007 15:16:03	54963.5	279.5	5.23	5.266	0.136	-0.86584
2/21/2007 15:16:07	54967.0	283.0	5.22	5.261	0.131	-0.88137
2/21/2007 15:16:10	54970.0	286.0	5.22	5.256	0.127	-0.89758
2/21/2007 15:16:13	54973.5	289.5	5.21	5.252	0.123	-0.91076
2/21/2007 15:16:14	54974.5	290.5	5.21	5.249	0.120	-0.92127

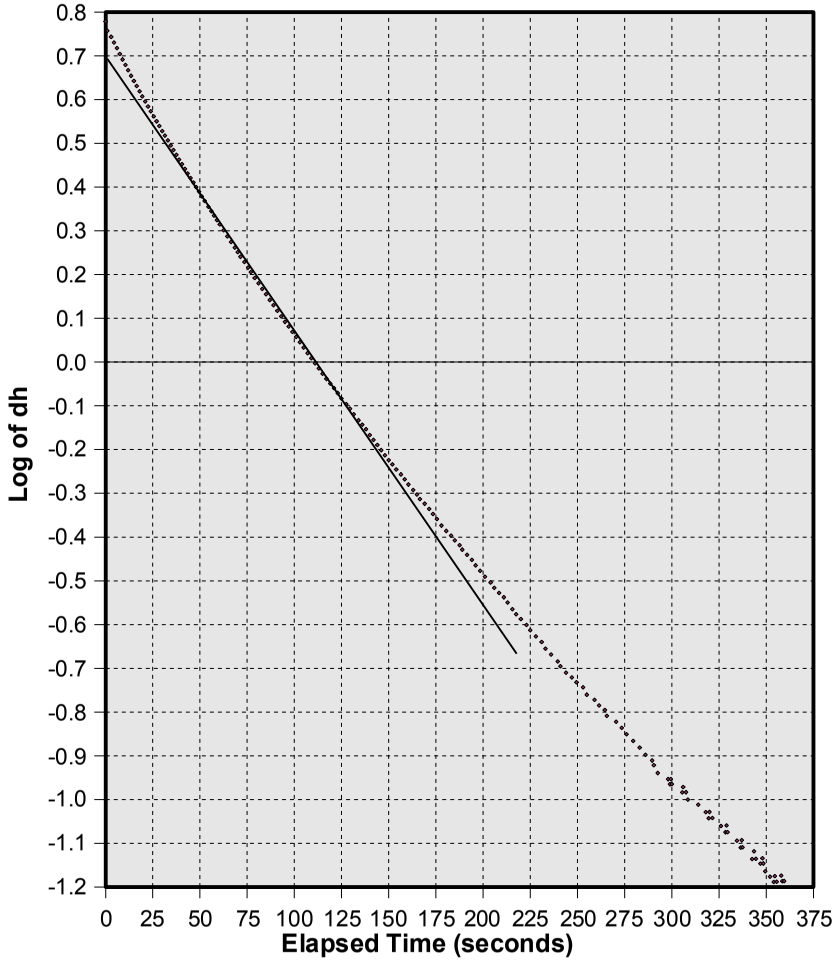
Slug Test P3-16

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 15:16:16	54976.5	292.5	5.2	5.245	0.115	-0.93931
2/21/2007 15:16:22	54982.0	298.0	5.2	5.241	0.111	-0.95336
2/21/2007 15:16:23	54983.0	299.0	5.2	5.238	0.108	-0.96498
2/21/2007 15:16:23	54983.5	299.5	5.2	5.241	0.111	-0.95300
2/21/2007 15:16:24	54984.0	300.0	5.2	5.238	0.108	-0.96473
2/21/2007 15:16:29	54989.5	305.5	5.19	5.233	0.104	-0.98381
2/21/2007 15:16:30	54990.0	306.0	5.2	5.236	0.107	-0.97131
2/21/2007 15:16:31	54991.5	307.5	5.19	5.233	0.104	-0.98329
2/21/2007 15:16:32	54992.5	308.5	5.19	5.230	0.100	-1.00007
2/21/2007 15:16:38	54998.0	314.0	5.19	5.227	0.097	-1.01178
2/21/2007 15:16:42	55002.0	318.0	5.18	5.223	0.094	-1.02886
2/21/2007 15:16:43	55003.5	319.5	5.18	5.220	0.091	-1.04257
2/21/2007 15:16:44	55004.0	320.0	5.18	5.223	0.094	-1.02829
2/21/2007 15:16:45	55005.5	321.5	5.18	5.220	0.091	-1.04198
2/21/2007 15:16:50	55010.0	326.0	5.17	5.217	0.087	-1.06016
2/21/2007 15:16:52	55012.5	328.5	5.17	5.214	0.084	-1.07460
2/21/2007 15:16:53	55013.0	329.0	5.17	5.217	0.087	-1.05924
2/21/2007 15:16:53	55013.5	329.5	5.17	5.214	0.084	-1.07428
2/21/2007 15:16:58	55018.5	334.5	5.17	5.210	0.081	-1.09373
2/21/2007 15:17:00	55020.5	336.5	5.16	5.207	0.078	-1.10952
2/21/2007 15:17:01	55021.0	337.0	5.17	5.210	0.081	-1.09290
2/21/2007 15:17:01	55021.5	337.5	5.16	5.207	0.078	-1.10917
2/21/2007 15:17:06	55026.5	342.5	5.16	5.203	0.073	-1.13619
2/21/2007 15:17:07	55027.5	343.5	5.16	5.206	0.076	-1.11837
2/21/2007 15:17:08	55028.5	344.5	5.16	5.203	0.073	-1.13546
2/21/2007 15:17:11	55031.0	347.0	5.16	5.201	0.071	-1.14655
2/21/2007 15:17:12	55032.0	348.0	5.16	5.203	0.073	-1.13418
2/21/2007 15:17:12	55032.5	348.5	5.16	5.201	0.071	-1.14599
2/21/2007 15:17:13	55033.5	349.5	5.15	5.198	0.069	-1.16423
2/21/2007 15:17:16	55036.0	352.0	5.15	5.196	0.067	-1.17609
2/21/2007 15:17:18	55038.0	354.0	5.15	5.194	0.065	-1.18849
2/21/2007 15:17:18	55038.5	354.5	5.15	5.196	0.067	-1.17508
2/21/2007 15:17:19	55039.5	355.5	5.15	5.194	0.065	-1.18787
2/21/2007 15:17:22	55042.0	358.0	5.15	5.197	0.067	-1.17368
2/21/2007 15:17:22	55042.5	358.5	5.15	5.195	0.065	-1.18663
2/21/2007 15:17:23	55043.5	359.5	5.15	5.195	0.065	-1.18622

Slug Test P3-16

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	21.24	ft
Stick up height:	2.83	ft
Depth to sand pack (BGS):	5.25	ft
Depth to screened interval (BGS):	6.24	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	7.16	ft
Initial Head Change:	6.00	ft
Total well length:	24.07	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	15.00	ft
Length of open section (L_e):	15.00	ft
L_e / r_w:	42.3529	
A (dimensionless):	2.950	
B (dimensionless):	0.428	
Drawdown at time = 0 (y_0):	3.26	ft
Drawdown at time = t (y_t):	0.56	ft
Elapsed Time between y_0 and y_t (t):	123	sec
Initial water column in well (L_w):	16.91	ft
$\ln(R_e/r_w)$ =	2.60	
K =	8.64E-06	ft/sec
	2.63E-04	**cm/sec**
	272.37	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-17

Initial offset in logger reading (feet):	-0.042	Date:	02/21/2007
Offset increment in logger reading (feet/sec):	0.000014		
Initial depth to water table (feet):	6.72		
Depth of probe below water table (feet):	4.031		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:33:13	52393.0	0.0	9.92	9.955	5.924	0.77263
2/21/2007 14:33:13	52393.5	0.5	9.64	9.675	5.644	0.75160
2/21/2007 14:33:14	52394.0	1.0	9.37	9.407	5.376	0.73047
2/21/2007 14:33:15	52395.0	2.0	9.21	9.254	5.223	0.71793
2/21/2007 14:33:16	52396.0	3.0	9.04	9.080	5.049	0.70321
2/21/2007 14:33:17	52397.0	4.0	8.86	8.901	4.870	0.68754
2/21/2007 14:33:18	52398.0	5.0	8.69	8.734	4.703	0.67238
2/21/2007 14:33:19	52399.0	6.0	8.55	8.589	4.558	0.65878
2/21/2007 14:33:20	52400.0	7.0	8.39	8.433	4.402	0.64365
2/21/2007 14:33:21	52401.0	8.0	8.26	8.295	4.264	0.62982
2/21/2007 14:33:22	52402.0	9.0	8.13	8.168	4.137	0.61669
2/21/2007 14:33:23	52403.0	10.0	8	8.043	4.012	0.60336
2/21/2007 14:33:24	52404.0	11.0	7.88	7.923	3.892	0.59017
2/21/2007 14:33:25	52405.0	12.0	7.77	7.813	3.782	0.57772
2/21/2007 14:33:26	52406.0	13.0	7.66	7.704	3.673	0.56502
2/21/2007 14:33:27	52407.0	14.0	7.56	7.603	3.572	0.55290
2/21/2007 14:33:28	52408.0	15.0	7.46	7.504	3.473	0.54070
2/21/2007 14:33:29	52409.0	16.0	7.37	7.408	3.377	0.52852
2/21/2007 14:33:30	52410.0	17.0	7.28	7.323	3.292	0.51745
2/21/2007 14:33:31	52411.0	18.0	7.2	7.236	3.205	0.50581
2/21/2007 14:33:32	52412.0	19.0	7.12	7.156	3.125	0.49483
2/21/2007 14:33:33	52413.0	20.0	7.04	7.076	3.045	0.48357
2/21/2007 14:33:34	52414.0	21.0	6.96	7.000	2.969	0.47259
2/21/2007 14:33:35	52415.0	22.0	6.89	6.925	2.894	0.46147
2/21/2007 14:33:36	52416.0	23.0	6.82	6.856	2.825	0.45099
2/21/2007 14:33:37	52417.0	24.0	6.75	6.788	2.757	0.44041
2/21/2007 14:33:38	52418.0	25.0	6.68	6.722	2.691	0.42988
2/21/2007 14:33:39	52419.0	26.0	6.62	6.660	2.629	0.41975
2/21/2007 14:33:40	52420.0	27.0	6.56	6.599	2.568	0.40955
2/21/2007 14:33:41	52421.0	28.0	6.5	6.540	2.509	0.39946
2/21/2007 14:33:42	52422.5	29.5	6.42	6.455	2.424	0.38448
2/21/2007 14:33:44	52424.0	31.0	6.33	6.374	2.343	0.36972
2/21/2007 14:33:45	52425.5	32.5	6.26	6.298	2.267	0.35539
2/21/2007 14:33:47	52427.0	34.0	6.19	6.225	2.194	0.34117
2/21/2007 14:33:48	52428.5	35.5	6.12	6.156	2.125	0.32728
2/21/2007 14:33:50	52430.0	37.0	6.05	6.087	2.056	0.31294
2/21/2007 14:33:51	52431.5	38.5	5.98	6.023	1.992	0.29920
2/21/2007 14:33:53	52433.0	40.0	5.92	5.961	1.930	0.28546
2/21/2007 14:33:54	52434.5	41.5	5.87	5.906	1.875	0.27290
2/21/2007 14:33:56	52436.0	43.0	5.81	5.849	1.818	0.25948
2/21/2007 14:33:57	52437.5	44.5	5.76	5.797	1.766	0.24687
2/21/2007 14:33:59	52439.0	46.0	5.7	5.744	1.712	0.23363
2/21/2007 14:34:00	52440.5	47.5	5.66	5.696	1.665	0.22154
2/21/2007 14:34:02	52442.0	49.0	5.61	5.648	1.617	0.20883

Slug Test P3-17

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:34:03	52443.5	50.5	5.56	5.601	1.570	0.19602
2/21/2007 14:34:05	52445.0	52.0	5.52	5.560	1.529	0.18452
2/21/2007 14:34:06	52446.5	53.5	5.48	5.519	1.488	0.17271
2/21/2007 14:34:08	52448.0	55.0	5.44	5.476	1.445	0.15997
2/21/2007 14:34:09	52449.5	56.5	5.4	5.438	1.407	0.14840
2/21/2007 14:34:11	52451.0	58.0	5.36	5.402	1.371	0.13714
2/21/2007 14:34:12	52452.5	59.5	5.33	5.366	1.335	0.12558
2/21/2007 14:34:14	52454.0	61.0	5.29	5.330	1.299	0.11370
2/21/2007 14:34:15	52455.5	62.5	5.26	5.296	1.265	0.10218
2/21/2007 14:34:17	52457.5	64.5	5.22	5.256	1.225	0.08821
2/21/2007 14:34:19	52459.0	66.0	5.19	5.224	1.193	0.07671
2/21/2007 14:34:20	52460.5	67.5	5.16	5.196	1.165	0.06639
2/21/2007 14:34:22	52462.0	69.0	5.13	5.167	1.136	0.05544
2/21/2007 14:34:23	52463.5	70.5	5.1	5.138	1.107	0.04420
2/21/2007 14:34:25	52465.5	72.5	5.07	5.104	1.073	0.03064
2/21/2007 14:34:27	52467.5	74.5	5.03	5.073	1.042	0.01790
2/21/2007 14:34:29	52469.0	76.0	5.01	5.044	1.013	0.00563
2/21/2007 14:34:31	52471.0	78.0	4.97	5.013	0.982	-0.00788
2/21/2007 14:34:33	52473.0	80.0	4.95	4.984	0.953	-0.02091
2/21/2007 14:34:35	52475.0	82.0	4.92	4.955	0.924	-0.03434
2/21/2007 14:34:36	52476.5	83.5	4.89	4.933	0.902	-0.04482
2/21/2007 14:34:38	52478.5	85.5	4.87	4.906	0.875	-0.05803
2/21/2007 14:34:40	52480.5	87.5	4.84	4.882	0.851	-0.07013
2/21/2007 14:34:42	52482.0	89.0	4.82	4.862	0.831	-0.08047
2/21/2007 14:34:44	52484.0	91.0	4.8	4.838	0.807	-0.09321
2/21/2007 14:34:46	52486.0	93.0	4.78	4.816	0.785	-0.10523
2/21/2007 14:34:48	52488.0	95.0	4.76	4.794	0.763	-0.11760
2/21/2007 14:34:50	52490.0	97.0	4.73	4.773	0.742	-0.12974
2/21/2007 14:34:51	52491.5	98.5	4.72	4.756	0.725	-0.13982
2/21/2007 14:34:53	52493.5	100.5	4.7	4.734	0.703	-0.15323
2/21/2007 14:34:55	52495.5	102.5	4.68	4.714	0.683	-0.16579
2/21/2007 14:34:58	52498.0	105.0	4.66	4.695	0.664	-0.17807
2/21/2007 14:35:00	52500.0	107.0	4.64	4.678	0.647	-0.18936
2/21/2007 14:35:02	52502.0	109.0	4.62	4.661	0.630	-0.20095
2/21/2007 14:35:04	52504.0	111.0	4.6	4.643	0.612	-0.21357
2/21/2007 14:35:06	52506.0	113.0	4.59	4.624	0.593	-0.22729
2/21/2007 14:35:08	52508.5	115.5	4.57	4.607	0.575	-0.23996
2/21/2007 14:35:10	52510.5	117.5	4.55	4.591	0.560	-0.25145
2/21/2007 14:35:13	52513.0	120.0	4.54	4.574	0.543	-0.26486
2/21/2007 14:35:15	52515.0	122.0	4.52	4.559	0.528	-0.27704
2/21/2007 14:35:17	52517.0	124.0	4.51	4.545	0.514	-0.28873
2/21/2007 14:35:19	52519.5	126.5	4.49	4.532	0.501	-0.29987
2/21/2007 14:35:21	52521.0	128.0	4.48	4.520	0.489	-0.31042
2/21/2007 14:35:23	52523.5	130.5	4.47	4.506	0.475	-0.32306
2/21/2007 14:35:25	52525.5	132.5	4.46	4.493	0.462	-0.33513
2/21/2007 14:35:28	52528.0	135.0	4.44	4.481	0.450	-0.34658
2/21/2007 14:35:30	52530.5	137.5	4.43	4.466	0.435	-0.36134
2/21/2007 14:35:33	52533.0	140.0	4.42	4.456	0.425	-0.37147
2/21/2007 14:35:35	52535.0	142.0	4.41	4.444	0.413	-0.38393

Slug Test P3-17

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:35:37	52537.5	144.5	4.39	4.432	0.401	-0.39678
2/21/2007 14:35:39	52539.0	146.0	4.38	4.422	0.391	-0.40776
2/21/2007 14:35:41	52541.5	148.5	4.37	4.412	0.381	-0.41906
2/21/2007 14:35:44	52544.0	151.0	4.36	4.400	0.369	-0.43300
2/21/2007 14:35:46	52546.5	153.5	4.35	4.390	0.359	-0.44497
2/21/2007 14:35:48	52548.5	155.5	4.34	4.380	0.349	-0.45728
2/21/2007 14:35:51	52551.0	158.0	4.33	4.371	0.340	-0.46867
2/21/2007 14:35:53	52553.0	160.0	4.32	4.361	0.330	-0.48168
2/21/2007 14:35:55	52555.5	162.5	4.32	4.353	0.322	-0.49239
2/21/2007 14:35:58	52558.5	165.5	4.31	4.344	0.313	-0.50477
2/21/2007 14:36:00	52560.5	167.5	4.3	4.336	0.305	-0.51606
2/21/2007 14:36:02	52562.0	169.0	4.29	4.329	0.298	-0.52619
2/21/2007 14:36:04	52564.0	171.0	4.28	4.322	0.291	-0.53656
2/21/2007 14:36:06	52566.5	173.5	4.28	4.314	0.283	-0.54874
2/21/2007 14:36:08	52568.5	175.5	4.27	4.307	0.276	-0.55967
2/21/2007 14:36:11	52571.0	178.0	4.26	4.299	0.268	-0.57252
2/21/2007 14:36:13	52573.0	180.0	4.25	4.292	0.261	-0.58408
2/21/2007 14:36:15	52575.5	182.5	4.25	4.285	0.254	-0.59597
2/21/2007 14:36:17	52577.5	184.5	4.24	4.277	0.246	-0.60995
2/21/2007 14:36:20	52580.5	187.5	4.23	4.269	0.238	-0.62259
2/21/2007 14:36:24	52584.0	191.0	4.23	4.262	0.231	-0.63562
2/21/2007 14:36:26	52586.5	193.5	4.22	4.254	0.223	-0.65097
2/21/2007 14:36:28	52588.5	195.5	4.21	4.247	0.216	-0.66485
2/21/2007 14:36:31	52591.5	198.5	4.21	4.242	0.211	-0.67510
2/21/2007 14:36:32	52592.5	199.5	4.2	4.237	0.206	-0.68553
2/21/2007 14:36:35	52595.5	202.5	4.2	4.232	0.201	-0.69628
2/21/2007 14:36:38	52598.0	205.0	4.19	4.227	0.196	-0.70728
2/21/2007 14:36:40	52600.0	207.0	4.19	4.222	0.191	-0.71856
2/21/2007 14:36:43	52603.0	210.0	4.18	4.217	0.186	-0.73017
2/21/2007 14:36:45	52605.5	212.5	4.17	4.210	0.179	-0.74690
2/21/2007 14:36:47	52607.5	214.5	4.17	4.205	0.174	-0.75927
2/21/2007 14:36:50	52610.0	217.0	4.16	4.200	0.169	-0.77202
2/21/2007 14:36:52	52612.5	219.5	4.16	4.196	0.165	-0.78251
2/21/2007 14:36:55	52615.0	222.0	4.15	4.191	0.160	-0.79598
2/21/2007 14:36:57	52617.0	224.0	4.15	4.186	0.155	-0.80985
2/21/2007 14:36:59	52619.5	226.5	4.14	4.181	0.150	-0.82420
2/21/2007 14:37:02	52622.0	229.0	4.14	4.177	0.146	-0.83605
2/21/2007 14:37:04	52624.5	231.5	4.13	4.169	0.138	-0.86066
2/21/2007 14:37:09	52629.0	236.0	4.13	4.165	0.134	-0.87366
2/21/2007 14:37:11	52631.0	238.0	4.12	4.160	0.129	-0.89030
2/21/2007 14:37:14	52634.5	241.5	4.12	4.157	0.126	-0.90072
2/21/2007 14:37:18	52638.0	245.0	4.12	4.152	0.121	-0.91853
2/21/2007 14:37:20	52640.5	247.5	4.11	4.148	0.117	-0.93330
2/21/2007 14:37:22	52642.5	249.5	4.11	4.145	0.114	-0.94473
2/21/2007 14:37:25	52645.0	252.0	4.1	4.141	0.110	-0.96045
2/21/2007 14:37:27	52647.0	254.0	4.1	4.138	0.107	-0.97262
2/21/2007 14:37:31	52651.0	258.0	4.1	4.132	0.101	-0.99375
2/21/2007 14:37:34	52654.0	261.0	4.09	4.128	0.097	-1.01141
2/21/2007 14:37:35	52655.5	262.5	4.09	4.125	0.094	-1.02510

Slug Test P3-17

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:37:39	52659.0	266.0	4.09	4.121	0.090	-1.04415
2/21/2007 14:37:41	52661.0	268.0	4.08	4.118	0.087	-1.05896
2/21/2007 14:37:42	52662.5	269.5	4.08	4.116	0.085	-1.06913
2/21/2007 14:37:46	52666.0	273.0	4.08	4.114	0.083	-1.07970
2/21/2007 14:37:47	52667.5	274.5	4.08	4.111	0.080	-1.09576
2/21/2007 14:37:49	52669.5	276.5	4.07	4.109	0.078	-1.10688
2/21/2007 14:37:50	52670.5	277.5	4.07	4.106	0.075	-1.12396
2/21/2007 14:37:54	52674.0	281.0	4.07	4.104	0.073	-1.13597
2/21/2007 14:37:55	52675.0	282.0	4.07	4.106	0.075	-1.12433
2/21/2007 14:37:55	52675.5	282.5	4.07	4.104	0.073	-1.13609
2/21/2007 14:37:56	52676.0	283.0	4.07	4.102	0.071	-1.14818
2/21/2007 14:37:57	52677.5	284.5	4.06	4.100	0.069	-1.16071
2/21/2007 14:37:58	52678.5	285.5	4.06	4.097	0.066	-1.18009
2/21/2007 14:37:59	52679.0	286.0	4.06	4.100	0.069	-1.16085
2/21/2007 14:37:59	52679.5	286.5	4.06	4.097	0.066	-1.18019
2/21/2007 14:38:01	52681.5	288.5	4.06	4.095	0.064	-1.19374
2/21/2007 14:38:03	52683.0	290.0	4.06	4.097	0.066	-1.18052
2/21/2007 14:38:03	52683.5	290.5	4.06	4.095	0.064	-1.19393
2/21/2007 14:38:06	52686.5	293.5	4.06	4.092	0.061	-1.21509
2/21/2007 14:38:08	52688.5	295.5	4.05	4.090	0.059	-1.22980
2/21/2007 14:38:11	52691.0	298.0	4.05	4.088	0.057	-1.24507
2/21/2007 14:38:13	52693.0	300.0	4.05	4.086	0.055	-1.26084
2/21/2007 14:38:13	52693.5	300.5	4.05	4.083	0.052	-1.28533
2/21/2007 14:38:14	52694.0	301.0	4.05	4.086	0.055	-1.26096
2/21/2007 14:38:15	52695.0	302.0	4.05	4.083	0.052	-1.28551
2/21/2007 14:38:17	52697.0	304.0	4.04	4.079	0.048	-1.32066
2/21/2007 14:38:17	52697.5	304.5	4.05	4.081	0.050	-1.30292
2/21/2007 14:38:18	52698.0	305.0	4.05	4.083	0.052	-1.28587
2/21/2007 14:38:18	52698.5	305.5	4.05	4.081	0.050	-1.30304
2/21/2007 14:38:19	52699.0	306.0	4.05	4.083	0.052	-1.28599
2/21/2007 14:38:19	52699.5	306.5	4.05	4.081	0.050	-1.30317
2/21/2007 14:38:21	52701.5	308.5	4.04	4.079	0.048	-1.32125
2/21/2007 14:38:23	52703.5	310.5	4.04	4.074	0.043	-1.36960
2/21/2007 14:38:24	52704.0	311.0	4.04	4.076	0.045	-1.34979
2/21/2007 14:38:24	52704.5	311.5	4.04	4.079	0.048	-1.32164
2/21/2007 14:38:25	52705.0	312.0	4.04	4.076	0.045	-1.34993
2/21/2007 14:38:27	52707.5	314.5	4.04	4.074	0.043	-1.37018
2/21/2007 14:38:29	52709.5	316.5	4.04	4.072	0.041	-1.39135
2/21/2007 14:38:30	52710.0	317.0	4.04	4.074	0.043	-1.37055
2/21/2007 14:38:31	52711.0	318.0	4.04	4.072	0.041	-1.39158
2/21/2007 14:38:32	52712.0	319.0	4.03	4.069	0.038	-1.42509
2/21/2007 14:38:32	52712.5	319.5	4.03	4.067	0.036	-1.44894
2/21/2007 14:38:34	52714.0	321.0	4.03	4.069	0.038	-1.42543
2/21/2007 14:38:35	52715.0	322.0	4.03	4.067	0.036	-1.44937
2/21/2007 14:38:35	52715.5	322.5	4.03	4.069	0.038	-1.42567
2/21/2007 14:38:36	52716.0	323.0	4.03	4.067	0.036	-1.44955
2/21/2007 14:38:40	52720.0	327.0	4.03	4.064	0.033	-1.47546
2/21/2007 14:38:43	52723.5	330.5	4.03	4.062	0.031	-1.50292
2/21/2007 14:38:45	52725.0	332.0	4.03	4.064	0.033	-1.47639

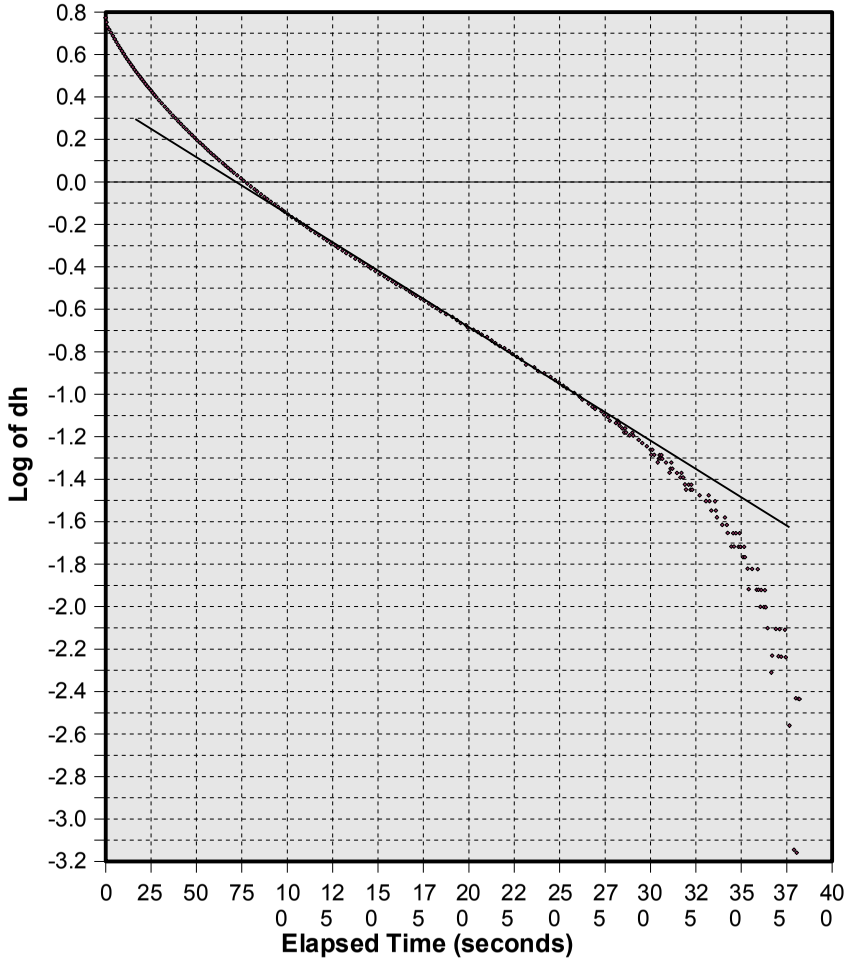
Slug Test P3-17

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
2/21/2007 14:38:45	52725.5	332.5	4.03	4.062	0.031	-1.50332
2/21/2007 14:38:46	52726.5	333.5	4.02	4.059	0.028	-1.54717
2/21/2007 14:38:48	52728.5	335.5	4.03	4.062	0.031	-1.50391
2/21/2007 14:38:49	52729.0	336.0	4.02	4.059	0.028	-1.54772
2/21/2007 14:38:49	52729.5	336.5	4.02	4.057	0.026	-1.57963
2/21/2007 14:38:52	52732.5	339.5	4.02	4.055	0.024	-1.61471
2/21/2007 14:38:54	52734.0	341.0	4.02	4.057	0.026	-1.58070
2/21/2007 14:38:55	52735.0	342.0	4.02	4.055	0.024	-1.61536
2/21/2007 14:38:55	52735.5	342.5	4.02	4.053	0.022	-1.65288
2/21/2007 14:38:57	52737.5	344.5	4.02	4.050	0.019	-1.71646
2/21/2007 14:38:58	52738.5	345.5	4.02	4.053	0.022	-1.65372
2/21/2007 14:38:59	52739.0	346.0	4.02	4.050	0.019	-1.71695
2/21/2007 14:39:00	52740.0	347.0	4.02	4.053	0.022	-1.65414
2/21/2007 14:39:01	52741.5	348.5	4.02	4.050	0.019	-1.71776
2/21/2007 14:39:02	52742.0	349.0	4.02	4.053	0.022	-1.65470
2/21/2007 14:39:02	52742.5	349.5	4.02	4.050	0.019	-1.71808
2/21/2007 14:39:04	52744.0	351.0	4.01	4.048	0.017	-1.76656
2/21/2007 14:39:04	52744.5	351.5	4.02	4.050	0.019	-1.71873
2/21/2007 14:39:05	52745.0	352.0	4.01	4.048	0.017	-1.76693
2/21/2007 14:39:06	52746.5	353.5	4.01	4.046	0.015	-1.82155
2/21/2007 14:39:07	52747.0	354.0	4.01	4.043	0.012	-1.91813
2/21/2007 14:39:09	52749.0	356.0	4.01	4.046	0.015	-1.82259
2/21/2007 14:39:11	52751.5	358.5	4.01	4.043	0.012	-1.92046
2/21/2007 14:39:12	52752.0	359.0	4.01	4.046	0.015	-1.82383
2/21/2007 14:39:12	52752.5	359.5	4.01	4.043	0.012	-1.92098
2/21/2007 14:39:13	52753.5	360.5	4.01	4.041	0.010	-2.00081
2/21/2007 14:39:14	52754.0	361.0	4.01	4.043	0.012	-1.92175
2/21/2007 14:39:15	52755.5	362.5	4.01	4.041	0.010	-2.00206
2/21/2007 14:39:16	52756.0	363.0	4.01	4.043	0.012	-1.92279
2/21/2007 14:39:16	52756.5	363.5	4.01	4.041	0.010	-2.00268
2/21/2007 14:39:17	52757.5	364.5	4	4.039	0.008	-2.10105
2/21/2007 14:39:19	52759.5	366.5	4	4.036	0.005	-2.31021
2/21/2007 14:39:20	52760.0	367.0	4	4.037	0.006	-2.23001
2/21/2007 14:39:22	52762.0	369.0	4	4.039	0.008	-2.10460
2/21/2007 14:39:23	52763.5	370.5	4	4.037	0.006	-2.23373
2/21/2007 14:39:24	52764.0	371.0	4	4.039	0.008	-2.10618
2/21/2007 14:39:25	52765.0	372.0	4	4.037	0.006	-2.23533
2/21/2007 14:39:27	52767.0	374.0	4	4.039	0.008	-2.10857
2/21/2007 14:39:27	52767.5	374.5	4	4.037	0.006	-2.23801
2/21/2007 14:39:29	52769.5	376.5	4	4.034	0.003	-2.56032
2/21/2007 14:39:32	52772.0	379.0	4	4.032	0.001	-3.14483
2/21/2007 14:39:33	52773.0	380.0	4	4.035	0.004	-2.43155
2/21/2007 14:39:33	52773.5	380.5	4	4.032	0.001	-3.15805
2/21/2007 14:39:34	52774.5	381.5	4	4.035	0.004	-2.43408
2/21/2007 14:39:35	52775.0	382.0	4	4.035	0.004	-2.43492

Slug Test P3-17

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	21.05	ft
Stick up height:	2.95	ft
Depth to sand pack (BGS):	4.50	ft
Depth to screened interval (BGS):	6.05	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	6.72	ft
Initial Head Change:	5.92	ft
Total well length:	24.00	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	15.00	ft
Length of open section (L_e):	15.00	ft
L_e / r_w:	42.3529	
A (dimensionless):	2.950	
B (dimensionless):	0.493	
Drawdown at time = 0 (y_0):	0.95	ft
Drawdown at time = t (y_t):	0.07	ft
Elapsed Time between y_0 and y_t (t):	204.5	sec
Initial water column in well (L_w):	17.28	ft
$\ln(R_e/r_w)$ =	2.47	
K =	7.33E-06	ft/sec
	2.24E-04	**cm/sec**
	231.27	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

Slug Test P3-18S

Initial offset in logger reading (feet):	-0.026	Date:	03/07/2007
Offset increment in logger reading (feet/sec):	0.000047		
Initial depth to water table (feet):	2.31		
Depth of probe below water table (feet):	0.234		

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 13:26:39	48399.5	0.0	10.42	10.422	10.187	1.00806
3/7/2007 13:26:40	48400.0	0.5	10.37	10.373	10.138	1.00596
3/7/2007 13:26:40	48400.5	1.0	10.29	10.289	10.054	1.00235
3/7/2007 13:26:42	48402.0	2.5	10.22	10.224	9.989	0.99953
3/7/2007 13:26:44	48404.0	4.5	10.17	10.170	9.936	0.99721
3/7/2007 13:26:45	48405.5	6.0	10.12	10.123	9.889	0.99515
3/7/2007 13:26:47	48407.5	8.0	10.07	10.070	9.836	0.99281
3/7/2007 13:26:49	48409.5	10.0	10.01	10.015	9.781	0.99037
3/7/2007 13:26:51	48411.5	12.0	9.96	9.964	9.730	0.98810
3/7/2007 13:26:54	48414.0	14.5	9.91	9.908	9.674	0.98559
3/7/2007 13:26:56	48416.0	16.5	9.86	9.862	9.627	0.98351
3/7/2007 13:26:58	48418.5	19.0	9.81	9.809	9.574	0.98111
3/7/2007 13:27:01	48421.0	21.5	9.76	9.758	9.523	0.97879
3/7/2007 13:27:03	48423.5	24.0	9.71	9.707	9.472	0.97645
3/7/2007 13:27:06	48426.0	26.5	9.66	9.658	9.424	0.97424
3/7/2007 13:27:08	48428.5	29.0	9.61	9.611	9.377	0.97206
3/7/2007 13:27:11	48431.0	31.5	9.56	9.563	9.329	0.96983
3/7/2007 13:27:13	48433.5	34.0	9.52	9.516	9.282	0.96763
3/7/2007 13:27:16	48436.0	36.5	9.47	9.470	9.236	0.96546
3/7/2007 13:27:19	48439.0	39.5	9.42	9.419	9.184	0.96305
3/7/2007 13:27:22	48442.0	42.5	9.37	9.368	9.133	0.96063
3/7/2007 13:27:25	48445.0	45.5	9.32	9.321	9.086	0.95838
3/7/2007 13:27:27	48447.5	48.0	9.28	9.278	9.044	0.95636
3/7/2007 13:27:30	48450.5	51.0	9.23	9.232	8.998	0.95414
3/7/2007 13:27:33	48453.5	54.0	9.18	9.183	8.949	0.95176
3/7/2007 13:27:36	48456.5	57.0	9.14	9.139	8.905	0.94961
3/7/2007 13:27:39	48459.5	60.0	9.1	9.095	8.860	0.94746
3/7/2007 13:27:43	48463.0	63.5	9.05	9.046	8.811	0.94504
3/7/2007 13:27:46	48466.5	67.0	9	8.996	8.762	0.94261
3/7/2007 13:27:49	48469.5	70.0	8.96	8.954	8.720	0.94051
3/7/2007 13:27:52	48472.5	73.0	8.92	8.914	8.680	0.93851
3/7/2007 13:27:55	48475.5	76.0	8.87	8.870	8.636	0.93630
3/7/2007 13:27:58	48478.5	79.0	8.83	8.828	8.594	0.93417
3/7/2007 13:28:01	48481.5	82.0	8.79	8.786	8.551	0.93204
3/7/2007 13:28:05	48485.0	85.5	8.74	8.742	8.507	0.92979
3/7/2007 13:28:08	48488.5	89.0	8.7	8.696	8.462	0.92748
3/7/2007 13:28:11	48491.5	92.0	8.66	8.654	8.420	0.92531
3/7/2007 13:28:14	48494.5	95.0	8.62	8.614	8.380	0.92323
3/7/2007 13:28:17	48497.5	98.0	8.58	8.575	8.341	0.92120
3/7/2007 13:28:20	48500.5	101.0	8.54	8.535	8.301	0.91910
3/7/2007 13:28:23	48503.5	104.0	8.5	8.495	8.260	0.91700
3/7/2007 13:28:26	48506.5	107.0	8.46	8.455	8.220	0.91488
3/7/2007 13:28:29	48509.5	110.0	8.42	8.414	8.180	0.91276
3/7/2007 13:28:32	48512.5	113.0	8.38	8.374	8.140	0.91062

Slug Test P3-18S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 13:28:36	48516.0	116.5	8.33	8.330	8.096	0.90826
3/7/2007 13:28:39	48519.0	119.5	8.29	8.290	8.056	0.90610
3/7/2007 13:28:42	48522.5	123.0	8.25	8.250	8.015	0.90393
3/7/2007 13:28:45	48525.5	126.0	8.22	8.212	7.977	0.90186
3/7/2007 13:28:48	48528.5	129.0	8.18	8.174	7.939	0.89978
3/7/2007 13:28:52	48532.0	132.5	8.14	8.131	7.897	0.89746
3/7/2007 13:28:55	48535.0	135.5	8.1	8.093	7.859	0.89536
3/7/2007 13:28:58	48538.0	138.5	8.06	8.057	7.823	0.89336
3/7/2007 13:29:01	48541.0	141.5	8.03	8.021	7.787	0.89135
3/7/2007 13:29:04	48544.0	144.5	7.99	7.983	7.748	0.88921
3/7/2007 13:29:07	48547.5	148.0	7.95	7.945	7.710	0.88707
3/7/2007 13:29:11	48551.0	151.5	7.91	7.907	7.672	0.88492
3/7/2007 13:29:14	48554.0	154.5	7.88	7.870	7.636	0.88286
3/7/2007 13:29:17	48557.0	157.5	7.84	7.834	7.600	0.88080
3/7/2007 13:29:20	48560.5	161.0	7.8	7.796	7.562	0.87862
3/7/2007 13:29:24	48564.0	164.5	7.76	7.758	7.524	0.87642
3/7/2007 13:29:28	48568.0	168.5	7.72	7.717	7.482	0.87404
3/7/2007 13:29:31	48571.5	172.0	7.68	7.678	7.443	0.87176
3/7/2007 13:29:34	48574.5	175.0	7.65	7.641	7.407	0.86964
3/7/2007 13:29:38	48578.5	179.0	7.61	7.605	7.371	0.86752
3/7/2007 13:29:42	48582.0	182.5	7.57	7.566	7.332	0.86520
3/7/2007 13:29:46	48586.0	186.5	7.53	7.528	7.293	0.86293
3/7/2007 13:29:49	48589.5	190.0	7.5	7.492	7.257	0.86077
3/7/2007 13:29:53	48593.5	194.0	7.46	7.454	7.220	0.85854
3/7/2007 13:29:57	48597.0	197.5	7.43	7.420	7.186	0.85648
3/7/2007 13:30:01	48601.0	201.5	7.39	7.382	7.148	0.85417
3/7/2007 13:30:05	48605.0	205.5	7.36	7.348	7.114	0.85209
3/7/2007 13:30:08	48608.5	209.0	7.32	7.314	7.079	0.85000
3/7/2007 13:30:12	48612.5	213.0	7.29	7.278	7.043	0.84777
3/7/2007 13:30:16	48616.5	217.0	7.25	7.243	7.009	0.84566
3/7/2007 13:30:20	48620.5	221.0	7.22	7.207	6.973	0.84341
3/7/2007 13:30:24	48624.5	225.0	7.18	7.175	6.941	0.84140
3/7/2007 13:30:29	48629.0	229.5	7.15	7.141	6.906	0.83925
3/7/2007 13:30:33	48633.0	233.5	7.11	7.105	6.870	0.83697
3/7/2007 13:30:37	48637.0	237.5	7.08	7.072	6.838	0.83493
3/7/2007 13:30:40	48640.5	241.0	7.05	7.037	6.803	0.83269
3/7/2007 13:30:44	48644.0	244.5	7.01	7.002	6.768	0.83044
3/7/2007 13:30:47	48647.5	248.0	6.98	6.967	6.733	0.82818
3/7/2007 13:30:51	48651.5	252.0	6.94	6.934	6.699	0.82603
3/7/2007 13:30:54	48654.5	255.0	6.91	6.901	6.666	0.82388
3/7/2007 13:30:58	48658.0	258.5	6.88	6.865	6.631	0.82158
3/7/2007 13:31:01	48661.5	262.0	6.84	6.831	6.597	0.81934
3/7/2007 13:31:05	48665.0	265.5	6.81	6.800	6.566	0.81728
3/7/2007 13:31:10	48670.5	271.0	6.78	6.768	6.533	0.81514
3/7/2007 13:31:17	48677.0	277.5	6.75	6.735	6.500	0.81292
3/7/2007 13:31:22	48682.0	282.5	6.71	6.703	6.469	0.81083
3/7/2007 13:31:30	48690.5	291.0	6.68	6.673	6.439	0.80879
3/7/2007 13:31:38	48698.5	299.0	6.65	6.641	6.406	0.80660
3/7/2007 13:31:43	48703.5	304.0	6.62	6.607	6.373	0.80434

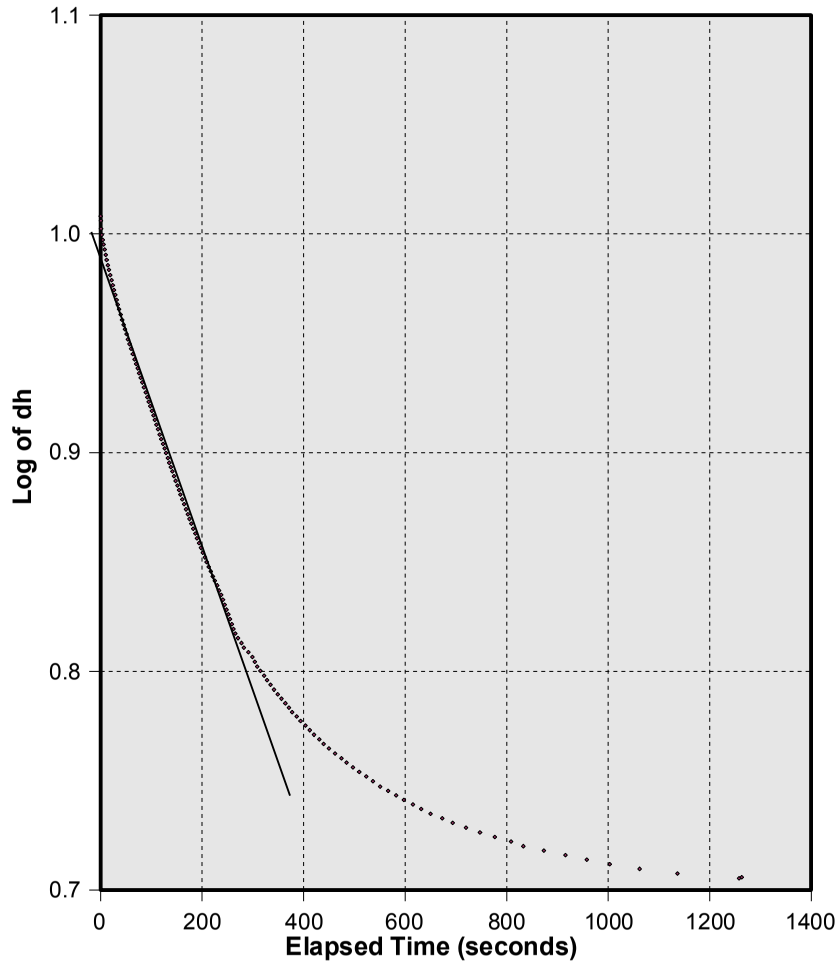
Slug Test P3-18S

Time	Time (sec)	Elapsed Time (sec)	Logger Reading (ft)	Adjusted Reading (ft)	dh (ft)	Log of dh
3/7/2007 13:31:48	48708.0	308.5	6.59	6.576	6.342	0.80221
3/7/2007 13:31:54	48714.5	315.0	6.56	6.547	6.312	0.80019
3/7/2007 13:32:01	48721.5	322.0	6.53	6.514	6.280	0.79796
3/7/2007 13:32:07	48727.5	328.0	6.5	6.485	6.251	0.79593
3/7/2007 13:32:14	48734.5	335.0	6.47	6.455	6.220	0.79382
3/7/2007 13:32:21	48741.0	341.5	6.44	6.424	6.189	0.79163
3/7/2007 13:32:28	48748.5	349.0	6.41	6.393	6.159	0.78950
3/7/2007 13:32:36	48756.0	356.5	6.38	6.365	6.130	0.78749
3/7/2007 13:32:43	48763.5	364.0	6.35	6.335	6.101	0.78541
3/7/2007 13:32:50	48770.5	371.0	6.32	6.307	6.073	0.78339
3/7/2007 13:32:57	48777.0	377.5	6.29	6.279	6.044	0.78136
3/7/2007 13:33:06	48786.0	386.5	6.27	6.250	6.016	0.77931
3/7/2007 13:33:13	48793.5	394.0	6.24	6.222	5.988	0.77726
3/7/2007 13:33:23	48803.0	403.5	6.21	6.194	5.959	0.77519
3/7/2007 13:33:31	48811.5	412.0	6.18	6.165	5.931	0.77311
3/7/2007 13:33:40	48820.0	420.5	6.15	6.137	5.902	0.77103
3/7/2007 13:33:50	48830.5	431.0	6.13	6.108	5.874	0.76893
3/7/2007 13:33:59	48839.0	439.5	6.1	6.080	5.846	0.76682
3/7/2007 13:34:09	48849.5	450.0	6.07	6.051	5.817	0.76470
3/7/2007 13:34:21	48861.5	462.0	6.04	6.021	5.786	0.76241
3/7/2007 13:34:34	48874.0	474.5	6.01	5.992	5.758	0.76026
3/7/2007 13:34:44	48884.0	484.5	5.99	5.966	5.731	0.75826
3/7/2007 13:34:56	48896.5	497.0	5.96	5.937	5.703	0.75609
3/7/2007 13:35:09	48909.0	509.5	5.93	5.910	5.675	0.75398
3/7/2007 13:35:23	48923.0	523.5	5.91	5.883	5.649	0.75194
3/7/2007 13:35:36	48936.0	536.5	5.88	5.854	5.620	0.74973
3/7/2007 13:35:50	48950.5	551.0	5.85	5.824	5.589	0.74735
3/7/2007 13:36:06	48966.0	566.5	5.82	5.798	5.564	0.74535
3/7/2007 13:36:22	48982.0	582.5	5.8	5.771	5.537	0.74326
3/7/2007 13:36:37	48997.0	597.5	5.77	5.745	5.511	0.74123
3/7/2007 13:36:55	49015.0	615.5	5.75	5.719	5.484	0.73911
3/7/2007 13:37:11	49031.0	631.5	5.72	5.693	5.458	0.73707
3/7/2007 13:37:29	49049.5	650.0	5.69	5.666	5.432	0.73493
3/7/2007 13:37:52	49072.5	673.0	5.67	5.640	5.405	0.73283
3/7/2007 13:38:13	49093.0	693.5	5.64	5.614	5.380	0.73074
3/7/2007 13:38:39	49119.5	720.0	5.62	5.587	5.352	0.72854
3/7/2007 13:39:07	49147.0	747.5	5.59	5.560	5.326	0.72640
3/7/2007 13:39:36	49176.0	776.5	5.57	5.534	5.300	0.72424
3/7/2007 13:40:08	49208.0	808.5	5.55	5.509	5.275	0.72223
3/7/2007 13:40:32	49232.5	833.0	5.52	5.483	5.249	0.72007
3/7/2007 13:41:13	49273.0	873.5	5.5	5.458	5.224	0.71800
3/7/2007 13:41:55	49315.5	916.0	5.48	5.434	5.200	0.71600
3/7/2007 13:42:37	49357.5	958.0	5.45	5.409	5.175	0.71391
3/7/2007 13:43:22	49402.5	1003.0	5.43	5.384	5.150	0.71180
3/7/2007 13:44:21	49461.5	1062.0	5.41	5.359	5.125	0.70970
3/7/2007 13:45:36	49536.0	1136.5	5.39	5.334	5.100	0.70753
3/7/2007 13:47:37	49657.5	1258.0	5.37	5.309	5.075	0.70542
3/7/2007 13:47:42	49662.5	1263.0	5.37	5.314	5.080	0.70583

Slug Test P3-18S

Slug Test by Bouwer and Rice

Displacement Method:	Injection	
Well depth:	16.17	ft
Stick up height:	2.73	ft
Depth to sand pack (BGS):	5.10	ft
Depth to screened interval (BGS):	6.17	ft
Well diameter:	2.00	in
Diameter of annular space:	8.50	in
Initial depth to water table from top of pipe:	2.31	ft
Initial Head Change:	10.19	ft
Total well length:	18.90	ft
Radius of well casing:	0.0833	ft
Assumed porosity of sand/gravel pack:	30%	
Adjusted radius of well casing:	0.2061	ft
r_c:	0.0833	ft
Radius of gravel pack (r_w):	0.3542	ft
Screened interval:	10.00	ft
Length of open section (L_e):	10.00	ft
L_e / r_w:	28.2353	
A (dimensionless):	2.502	
B (dimensionless):	0.416	
Drawdown at time = 0 (y_0):	9.96	ft
Drawdown at time = t (y_t):	5.19	ft
Elapsed Time between y_0 and y_t (t):	921	sec
Initial water column in well (L_w):	16.59	ft
$\ln(R_e/r_w)$ =	2.43	
K =	5.96E-07	ft/sec
	1.82E-05	**cm/sec**
	18.79	ft/yr



Water above sand pack:	Yes
%Duration below sand pack:	0.00%
Water above screen:	Yes
%Duration below screen:	0.00%

APPENDIX D

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1960	1	31	0	2.05	0.18	0.42	0.03	**5.47**
1960	2	29	0	1.77	0.14	0.36	0.02	**4.23**
1960	3	31	0	0.88	0.13	0.28	0.01	**3.84**
1960	4	30	0	0.76	0.09	0.20	0.01	**2.82**
1960	5	31	0	2.01	0.22	0.50	0.05	**6.53**
1960	6	30	0	0.31	0.04	0.08	0.00	**1.34**
1960	7	31	0	7.42	0.39	1.35	0.33	**11.84**
1960	8	31	0	1.17	0.16	0.28	0.01	**4.65**
1960	9	30	0	2.90	0.16	0.55	0.06	**4.93**
1960	10	31	0	1.00	0.07	0.20	0.01	**2.15**
1960	11	30	0	0.63	0.05	0.13	0.00	**1.47**
1960	12	31	0	1.20	0.07	0.23	0.01	**2.16**
1961	1	31	0	1.01	0.09	0.23	0.01	**2.68**
1961	2	28	0	1.25	0.20	0.36	0.02	**6.13**
1961	3	31	0	1.34	0.16	0.36	0.02	**4.74**
1961	4	30	0	0.84	0.11	0.23	0.01	**3.32**
1961	5	31	0	1.37	0.13	0.31	0.02	**4.02**
1961	6	30	0	3.07	0.22	0.57	0.06	**6.45**
1961	7	31	0	0.59	0.10	0.16	0.00	**2.87**
1961	8	31	0	1.29	0.14	0.28	0.01	**4.35**
1961	9	30	0	0.63	0.05	0.15	0.00	**1.40**
1961	10	31	0	0.50	0.03	0.09	0.00	**0.80**
1961	11	30	0	1.26	0.08	0.28	0.01	**2.54**
1961	12	31	0	0.91	0.12	0.26	0.01	**3.69**
1962	1	31	0	1.68	0.17	0.36	0.02	**4.96**
1962	2	28	0	0.94	0.13	0.25	0.01	**3.87**
1962	3	31	0	0.95	0.13	0.26	0.01	**4.02**
1962	4	30	0	1.53	0.14	0.35	0.02	**4.21**
1962	5	31	0	0.41	0.04	0.09	0.00	**1.22**
1962	6	30	0	1.89	0.18	0.39	0.03	**5.41**
1962	7	31	0	1.61	0.14	0.32	0.02	**4.22**
1962	8	31	0	1.64	0.11	0.31	0.02	**3.43**
1962	9	30	0	1.34	0.21	0.39	0.03	**6.32**
1962	10	31	0	0.27	0.02	0.07	0.00	**0.69**
1962	11	30	0	1.51	0.14	0.34	0.02	**4.08**
1962	12	31	0	0.79	0.09	0.20	0.01	**2.67**
1963	1	31	0	0.89	0.12	0.25	0.01	**3.56**
1963	2	28	0	0.70	0.12	0.20	0.01	**3.57**
1963	3	31	0	0.97	0.11	0.23	0.01	**3.29**
1963	4	30	0	0.82	0.09	0.22	0.01	**2.64**
1963	5	31	0	0.98	0.09	0.22	0.01	**2.69**
1963	6	30	0	1.40	0.13	0.30	0.02	**3.93**
1963	7	30	0	2.62	0.22	0.54	0.05	**6.58**
1963	8	31	0	2.78	0.21	0.62	0.07	**6.41**
1963	9	30	0	1.20	0.13	0.33	0.02	**3.79**
1963	10	31	0	0.28	0.01	0.05	0.00	**0.43**
1963	11	30	0	3.16	0.19	0.61	0.07	**5.67**
1963	12	31	0	1.10	0.12	0.26	0.01	**3.71**
1964	1	31	0	1.59	0.16	0.36	0.02	**4.82**
1964	2	29	0	0.89	0.19	0.29	0.02	**5.56**
1964	3	31	0	3.37	0.18	0.61	0.07	**5.34**
1964	4	30	0	1.09	0.08	0.21	0.01	**2.44**
1964	5	31	0	1.24	0.08	0.24	0.01	**2.33**
1964	6	30	0	0.92	0.07	0.19	0.01	**2.07**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1964	7	31	0	1.12	0.15	0.25	0.01	**4.36**
1964	8	31	0	3.37	0.34	0.71	0.09	**10.15**
1964	9	30	0	2.56	0.23	0.57	0.06	**6.81**
1964	10	31	0	3.50	0.26	0.79	0.11	**7.74**
1964	11	30	0	1.00	0.08	0.24	0.01	**2.29**
1964	12	31	0	3.49	0.17	0.62	0.07	**5.05**
1965	1	31	0	0.65	0.07	0.16	0.00	**2.04**
1965	2	28	0	1.39	0.13	0.33	0.02	**3.93**
1965	3	31	0	1.00	0.13	0.26	0.01	**3.82**
1965	4	30	0	2.23	0.12	0.40	0.03	**3.61**
1965	5	31	0	0.42	0.04	0.11	0.00	**1.34**
1965	6	30	0	1.94	0.23	0.45	0.04	**6.89**
1965	7	31	0	2.75	0.35	0.72	0.09	**10.54**
1965	8	31	0	0.62	0.05	0.16	0.00	**1.57**
1965	9	30	0	1.24	0.05	0.22	0.01	**1.56**
1965	10	31	0	1.65	0.06	0.29	0.02	**1.79**
1965	11	30	0	0.92	0.04	0.17	0.01	**1.12**
1965	12	31	0	0.28	0.02	0.06	0.00	**0.58**
1966	1	31	0	1.80	0.19	0.42	0.03	**5.69**
1966	2	28	0	1.69	0.18	0.39	0.03	**5.27**
1966	3	31	0	1.86	0.08	0.33	0.02	**2.27**
1966	4	30	0	0.37	0.05	0.10	0.00	**1.45**
1966	5	31	0	1.68	0.27	0.45	0.04	**7.96**
1966	6	30	0	0.95	0.12	0.26	0.01	**3.51**
1966	7	31	0	2.94	0.25	0.69	0.09	**7.37**
1966	8	31	0	1.69	0.28	0.44	0.03	**8.50**
1966	9	30	0	0.85	0.08	0.20	0.01	**2.34**
1966	10	31	0	0.59	0.04	0.13	0.00	**1.18**
1966	11	30	0	0.67	0.06	0.17	0.01	**1.72**
1966	12	31	0	1.01	0.10	0.22	0.01	**3.13**
1967	1	31	0	1.88	0.13	0.37	0.02	**4.02**
1967	2	28	0	1.03	0.17	0.30	0.02	**4.97**
1967	3	31	0	0.67	0.03	0.12	0.00	**1.03**
1967	4	30	0	1.65	0.10	0.31	0.02	**2.89**
1967	5	31	0	0.62	0.09	0.15	0.00	**2.66**
1967	6	30	0	3.05	0.17	0.55	0.06	**4.97**
1967	7	31	0	1.21	0.19	0.36	0.02	**5.63**
1967	8	31	0	3.14	0.46	0.84	0.13	**13.72**
1967	9	30	0	2.14	0.21	0.57	0.06	**6.16**
1967	10	31	0	0.58	0.03	0.12	0.00	**1.03**
1967	11	30	0	1.06	0.08	0.23	0.01	**2.42**
1967	12	31	0	1.17	0.18	0.33	0.02	**5.29**
1968	1	31	0	1.12	0.11	0.28	0.01	**3.42**
1968	2	29	0	0.74	0.04	0.14	0.00	**1.18**
1968	3	31	0	1.08	0.09	0.26	0.01	**2.78**
1968	4	30	0	1.18	0.10	0.24	0.01	**2.94**
1968	5	31	0	0.85	0.10	0.20	0.01	**2.96**
1968	6	30	0	1.79	0.23	0.48	0.04	**6.97**
1968	7	31	0	2.39	0.21	0.50	0.04	**6.17**
1968	8	31	0	2.45	0.23	0.60	0.06	**6.82**
1968	9	30	0	0.13	0.01	0.02	0.00	**0.17**
1968	10	31	0	4.12	0.20	0.73	0.10	**5.97**
1968	11	30	0	0.81	0.13	0.24	0.01	**3.75**
1968	12	31	0	0.45	0.09	0.15	0.00	**2.59**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1969	1	31	0	1.12	0.06	0.23	0.01	**1.87**
1969	2	28	0	0.80	0.13	0.22	0.01	**3.80**
1969	3	31	0	1.17	0.15	0.33	0.02	**4.64**
1969	4	30	0	1.20	0.11	0.27	0.01	**3.32**
1969	5	31	0	1.18	0.08	0.24	0.01	**2.46**
1969	6	30	0	1.55	0.13	0.31	0.02	**3.94**
1969	7	31	0	1.69	0.15	0.32	0.02	**4.49**
1969	8	31	0	2.48	0.17	0.48	0.04	**5.21**
1969	9	30	0	2.21	0.15	0.50	0.05	**4.63**
1969	10	31	0	2.85	0.10	0.50	0.05	**2.91**
1969	11	30	0	0.96	0.08	0.22	0.01	**2.42**
1969	12	31	0	0.81	0.10	0.23	0.01	**2.88**
1970	1	31	0	0.76	0.08	0.17	0.00	**2.31**
1970	2	28	0	1.06	0.14	0.29	0.02	**4.20**
1970	3	31	0	0.67	0.11	0.16	0.00	**3.15**
1970	4	30	0	1.73	0.15	0.37	0.02	**4.50**
1970	5	31	0	0.60	0.05	0.13	0.00	**1.36**
1970	6	30	0	0.94	0.11	0.26	0.01	**3.20**
1970	7	31	0	1.38	0.15	0.34	0.02	**4.54**
1970	8	31	0	1.31	0.15	0.32	0.02	**4.51**
1970	9	30	0	0.96	0.07	0.21	0.01	**1.98**
1970	10	31	0	0.62	0.09	0.18	0.01	**2.73**
1970	11	30	0	1.48	0.09	0.28	0.01	**2.58**
1970	12	31	0	1.44	0.09	0.27	0.01	**2.61**
1971	1	31	0	1.20	0.13	0.25	0.01	**3.96**
1971	2	28	0	1.28	0.18	0.37	0.03	**5.43**
1971	3	31	0	2.01	0.17	0.42	0.03	**5.25**
1971	4	30	0	1.40	0.13	0.30	0.02	**3.96**
1971	5	31	0	1.15	0.12	0.27	0.01	**3.47**
1971	6	30	0	0.97	0.07	0.22	0.01	**2.04**
1971	7	31	0	2.82	0.27	0.60	0.07	**8.15**
1971	8	31	0	1.41	0.12	0.30	0.02	**3.48**
1971	9	30	0	1.84	0.14	0.45	0.04	**4.29**
1971	10	31	0	1.86	0.24	0.47	0.04	**7.11**
1971	11	30	0	0.56	0.05	0.13	0.00	**1.57**
1971	12	31	0	0.66	0.04	0.14	0.00	**1.35**
1972	1	31	0	1.26	0.10	0.29	0.02	**3.01**
1972	2	29	0	1.11	0.17	0.29	0.02	**5.06**
1972	3	31	0	1.28	0.12	0.27	0.01	**3.46**
1972	4	30	0	1.09	0.10	0.23	0.01	**2.86**
1972	5	31	0	2.17	0.24	0.45	0.04	**7.11**
1972	6	30	0	1.94	0.11	0.36	0.02	**3.21**
1972	7	31	0	1.61	0.16	0.38	0.03	**4.65**
1972	8	31	0	2.19	0.16	0.43	0.03	**4.75**
1972	9	30	0	1.46	0.15	0.35	0.02	**4.60**
1972	10	31	0	0.77	0.06	0.17	0.01	**1.68**
1972	11	30	0	1.54	0.18	0.34	0.02	**5.54**
1973	3	17	0	0.68	0.13	0.22	0.01	**3.81**
1973	4	30	0	1.67	0.18	0.43	0.03	**5.32**
1973	5	31	0	1.25	0.13	0.26	0.01	**3.80**
1973	6	30	0	0.69	0.10	0.18	0.01	**3.11**
1973	7	31	0	1.03	0.12	0.30	0.02	**3.66**
1973	8	31	0	1.30	0.12	0.29	0.01	**3.72**
1973	9	30	0	0.88	0.05	0.17	0.01	**1.44**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1973	10	31	0	0.37	0.02	0.07	0.00	**0.59**
1973	11	30	0	0.58	0.04	0.12	0.00	**1.24**
1973	12	31	0	1.97	0.23	0.50	0.04	**7.04**
1974	1	31	0	0.87	0.12	0.20	0.01	**3.74**
1974	2	28	0	1.67	0.18	0.40	0.03	**5.39**
1974	3	31	0	1.27	0.18	0.35	0.02	**5.41**
1974	4	30	0	1.49	0.13	0.35	0.02	**3.90**
1974	5	31	0	1.20	0.16	0.28	0.01	**4.68**
1974	6	30	0	0.92	0.09	0.21	0.01	**2.73**
1974	7	31	0	1.42	0.14	0.32	0.02	**4.10**
1974	8	31	0	1.11	0.21	0.36	0.02	**6.28**
1974	9	30	0	1.39	0.13	0.31	0.02	**3.98**
1974	10	31	0	0.60	0.06	0.17	0.00	**1.86**
1974	11	30	0	0.48	0.05	0.11	0.00	**1.36**
1974	12	31	0	1.35	0.13	0.30	0.02	**4.03**
1975	1	31	0	1.05	0.20	0.31	0.02	**5.91**
1975	2	28	0	1.36	0.15	0.35	0.02	**4.39**
1975	3	31	0	0.74	0.12	0.21	0.01	**3.75**
1975	4	30	0	1.25	0.10	0.26	0.01	**2.91**
1975	5	31	0	1.61	0.21	0.39	0.03	**6.18**
1975	6	30	0	1.98	0.12	0.39	0.03	**3.52**
1975	7	31	0	4.08	0.30	0.81	0.12	**9.03**
1975	8	31	0	0.80	0.05	0.17	0.01	**1.49**
1975	9	30	0	1.98	0.29	0.49	0.04	**8.56**
1975	10	31	0	0.53	0.04	0.13	0.00	**1.08**
1975	11	30	0	1.43	0.10	0.32	0.02	**2.86**
1975	12	31	0	1.28	0.14	0.32	0.02	**4.33**
1976	1	31	0	2.08	0.17	0.45	0.04	**4.96**
1976	2	29	0	1.19	0.05	0.22	0.01	**1.41**
1976	3	31	0	0.56	0.09	0.15	0.00	**2.55**
1976	4	30	0	0.81	0.03	0.15	0.00	**0.94**
1976	5	31	0	1.15	0.16	0.30	0.02	**4.72**
1976	6	30	0	2.00	0.15	0.42	0.03	**4.63**
1976	7	31	0	0.98	0.08	0.20	0.01	**2.32**
1976	8	31	0	1.08	0.09	0.23	0.01	**2.64**
1976	9	30	0	1.63	0.13	0.34	0.02	**3.78**
1976	10	31	0	1.23	0.09	0.25	0.01	**2.70**
1976	11	30	0	0.79	0.08	0.20	0.01	**2.25**
1976	12	31	0	1.63	0.15	0.34	0.02	**4.43**
1977	1	31	0	2.39	0.13	0.44	0.03	**3.99**
1977	2	28	0	0.97	0.09	0.24	0.01	**2.80**
1977	3	31	0	1.24	0.19	0.37	0.02	**5.84**
1977	4	30	0	0.67	0.04	0.13	0.00	**1.23**
1977	5	31	0	2.77	0.13	0.49	0.04	**3.95**
1977	6	30	0	0.60	0.06	0.14	0.00	**1.72**
1977	7	31	0	3.35	0.14	0.59	0.06	**4.14**
1977	8	31	0	1.34	0.13	0.30	0.02	**3.83**
1977	9	30	0	3.48	0.16	0.66	0.08	**4.79**
1977	10	31	0	1.10	0.13	0.26	0.01	**3.93**
1977	11	30	0	3.88	0.19	0.70	0.09	**5.73**
1977	12	31	0	1.23	0.14	0.31	0.02	**4.33**
1978	1	31	0	1.61	0.18	0.36	0.02	**5.31**
1978	2	28	0	0.26	0.04	0.08	0.00	**1.15**
1978	3	31	0	1.83	0.17	0.41	0.03	**5.25**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1978	4	30	0	1.95	0.18	0.42	0.03	**5.29**
1978	5	31	0	1.16	0.11	0.28	0.01	**3.38**
1978	6	30	0	1.59	0.19	0.39	0.03	**5.62**
1978	7	31	0	1.66	0.18	0.42	0.03	**5.51**
1978	8	31	0	1.71	0.12	0.32	0.02	**3.50**
1978	9	30	0	0.94	0.07	0.23	0.01	**1.98**
1978	10	31	0	0.91	0.04	0.16	0.00	**1.18**
1978	11	30	0	1.59	0.20	0.45	0.04	**5.98**
1978	12	31	0	1.14	0.09	0.23	0.01	**2.64**
1979	1	31	0	1.27	0.18	0.34	0.02	**5.25**
1979	2	28	0	1.28	0.15	0.29	0.02	**4.45**
1979	3	31	0	1.65	0.14	0.35	0.02	**4.25**
1979	4	30	0	0.82	0.09	0.21	0.01	**2.71**
1979	5	31	0	1.53	0.20	0.35	0.02	**5.87**
1979	6	30	0	2.22	0.20	0.52	0.05	**5.94**
1979	7	31	0	0.68	0.08	0.19	0.01	**2.35**
1979	8	31	0	1.62	0.08	0.29	0.02	**2.39**
1979	9	30	0	5.38	0.39	1.05	0.20	**11.62**
1979	10	31	0	0.60	0.04	0.12	0.00	**1.20**
1979	11	30	0	2.21	0.18	0.52	0.05	**5.43**
1979	12	31	0	0.56	0.05	0.15	0.00	**1.54**
1980	1	31	0	0.63	0.14	0.21	0.01	**4.08**
1980	2	29	0	0.71	0.06	0.15	0.00	**1.90**
1980	3	31	0	1.41	0.20	0.37	0.02	**6.11**
1980	4	30	0	1.14	0.11	0.27	0.01	**3.23**
1980	5	31	0	1.12	0.08	0.23	0.01	**2.37**
1980	6	30	0	1.04	0.06	0.19	0.01	**1.73**
1980	7	31	0	0.77	0.09	0.21	0.01	**2.62**
1980	8	31	0	0.92	0.08	0.21	0.01	**2.25**
1980	9	30	0	1.21	0.11	0.26	0.01	**3.29**
1980	10	31	0	1.84	0.15	0.38	0.03	**4.60**
1980	11	30	0	0.78	0.09	0.21	0.01	**2.72**
1980	12	31	0	0.66	0.07	0.16	0.00	**2.14**
1981	1	31	0	0.55	0.04	0.12	0.00	**1.34**
1981	2	28	0	0.90	0.10	0.21	0.01	**3.13**
1981	3	31	0	0.82	0.06	0.17	0.01	**1.73**
1981	4	30	0	0.35	0.02	0.07	0.00	**0.63**
1981	5	31	0	0.70	0.08	0.17	0.01	**2.35**
1981	6	30	0	1.16	0.10	0.29	0.02	**3.09**
1981	7	31	0	1.09	0.09	0.21	0.01	**2.55**
1981	8	31	0	1.42	0.22	0.41	0.03	**6.53**
1981	9	30	0	0.91	0.05	0.18	0.01	**1.40**
1981	10	31	0	0.75	0.06	0.18	0.01	**1.80**
1981	11	30	0	0.21	0.02	0.05	0.00	**0.62**
1981	12	31	0	1.24	0.16	0.33	0.02	**4.91**
1982	1	31	0	1.37	0.22	0.35	0.02	**6.49**
1982	2	28	0	1.21	0.20	0.33	0.02	**5.95**
1982	3	31	0	0.72	0.07	0.18	0.01	**2.12**
1982	4	30	0	1.18	0.13	0.30	0.02	**4.00**
1982	5	31	0	2.06	0.14	0.38	0.03	**4.29**
1982	6	30	0	3.77	0.27	0.70	0.09	**8.07**
1982	7	31	0	1.55	0.17	0.32	0.02	**4.96**
1982	8	31	0	2.12	0.15	0.40	0.03	**4.44**
1982	9	30	0	0.63	0.07	0.17	0.01	**2.18**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1982	10	31	0	2.83	0.18	0.56	0.06	**5.29**
1982	11	30	0	1.10	0.09	0.25	0.01	**2.71**
1982	12	31	0	1.63	0.13	0.31	0.02	**3.81**
1983	1	31	0	0.53	0.09	0.14	0.00	**2.71**
1983	2	28	0	1.52	0.20	0.35	0.02	**6.12**
1983	3	31	0	1.80	0.21	0.44	0.03	**6.42**
1983	4	30	0	2.00	0.19	0.41	0.03	**5.71**
1983	5	31	0	3.45	0.19	0.63	0.07	**5.73**
1983	6	30	0	2.97	0.18	0.58	0.06	**5.30**
1983	7	31	0	0.79	0.08	0.20	0.01	**2.48**
1983	8	31	0	0.76	0.03	0.14	0.00	**0.95**
1983	9	30	0	1.68	0.11	0.33	0.02	**3.22**
1983	10	31	0	1.07	0.06	0.20	0.01	**1.95**
1983	11	30	0	1.75	0.11	0.33	0.02	**3.38**
1983	12	31	0	1.38	0.21	0.38	0.03	**6.44**
1984	1	31	0	1.21	0.09	0.27	0.01	**2.55**
1984	2	29	0	2.35	0.21	0.49	0.05	**6.39**
1984	3	31	0	1.35	0.21	0.36	0.02	**6.28**
1984	4	30	0	1.15	0.12	0.26	0.01	**3.51**
1984	5	31	0	3.21	0.24	0.59	0.06	**7.14**
1984	6	30	0	0.75	0.07	0.20	0.01	**2.22**
1984	7	31	0	2.73	0.41	0.69	0.09	**12.19**
1984	8	31	0	2.47	0.15	0.48	0.04	**4.50**
1984	9	30	0	2.30	0.16	0.44	0.04	**4.79**
1984	10	31	0	0.51	0.03	0.10	0.00	**0.98**
1984	11	30	0	1.02	0.05	0.20	0.01	**1.63**
1984	12	31	0	1.15	0.07	0.22	0.01	**1.99**
1985	1	30	0	0.94	0.10	0.22	0.01	**2.98**
1985	2	28	0	1.30	0.16	0.35	0.02	**4.86**
1985	3	31	0	0.50	0.03	0.10	0.00	**1.02**
1985	4	30	0	0.30	0.02	0.06	0.00	**0.52**
1985	5	31	0	0.62	0.04	0.13	0.00	**1.32**
1985	6	30	0	0.87	0.09	0.20	0.01	**2.66**
1985	7	31	0	1.54	0.22	0.43	0.03	**6.63**
1985	8	31	0	1.00	0.09	0.22	0.01	**2.75**
1985	9	30	0	1.36	0.06	0.26	0.01	**1.86**
1985	10	31	0	1.38	0.09	0.25	0.01	**2.70**
1985	11	30	0	2.10	0.15	0.39	0.03	**4.50**
1985	12	31	0	1.08	0.05	0.21	0.01	**1.60**
1986	1	31	0	0.57	0.05	0.13	0.00	**1.65**
1986	2	28	0	0.53	0.06	0.12	0.00	**1.78**
1986	3	31	0	0.77	0.08	0.21	0.01	**2.42**
1986	4	30	0	0.46	0.04	0.10	0.00	**1.10**
1986	5	31	0	0.80	0.08	0.20	0.01	**2.40**
1986	6	30	0	2.34	0.15	0.44	0.04	**4.50**
1986	7	31	0	1.40	0.12	0.28	0.01	**3.59**
1986	8	31	0	3.15	0.36	0.71	0.09	**10.77**
1986	9	30	0	0.80	0.04	0.15	0.00	**1.14**
1986	10	31	0	0.57	0.05	0.12	0.00	**1.44**
1986	11	30	0	0.92	0.11	0.23	0.01	**3.44**
1986	12	31	0	2.28	0.16	0.42	0.03	**4.72**
1987	1	31	0	1.64	0.25	0.44	0.03	**7.50**
1987	2	28	0	1.18	0.11	0.29	0.02	**3.23**
1987	3	31	0	1.93	0.17	0.44	0.03	**5.15**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1987	4	30	0	2.24	0.12	0.41	0.03	**3.60**
1987	5	31	0	1.34	0.12	0.33	0.02	**3.52**
1987	6	30	0	0.83	0.09	0.22	0.01	**2.81**
1987	7	31	0	0.53	0.05	0.11	0.00	**1.40**
1987	8	31	0	1.05	0.09	0.25	0.01	**2.85**
1987	9	30	0	1.27	0.16	0.34	0.02	**4.81**
1987	10	31	0	1.20	0.06	0.22	0.01	**1.66**
1987	11	30	0	0.73	0.08	0.18	0.01	**2.42**
1987	12	31	0	0.81	0.09	0.22	0.01	**2.71**
1988	1	31	0	0.84	0.09	0.21	0.01	**2.81**
1988	2	29	0	1.00	0.09	0.22	0.01	**2.82**
1988	3	31	0	0.91	0.11	0.25	0.01	**3.29**
1988	4	30	0	0.88	0.10	0.23	0.01	**3.08**
1988	5	31	0	1.36	0.17	0.34	0.02	**4.95**
1988	6	30	0	2.77	0.23	0.57	0.06	**6.85**
1988	7	31	0	0.78	0.13	0.24	0.01	**3.75**
1988	8	31	0	1.04	0.14	0.29	0.01	**4.21**
1988	9	30	0	1.16	0.17	0.33	0.02	**4.96**
1988	10	31	0	1.23	0.10	0.28	0.01	**2.98**
1988	11	30	0	1.41	0.13	0.29	0.02	**3.87**
1988	12	31	0	0.26	0.02	0.05	0.00	**0.48**
1989	1	31	0	0.80	0.10	0.18	0.01	**2.91**
1989	2	28	0	1.20	0.18	0.34	0.02	**5.51**
1989	3	31	0	1.76	0.24	0.42	0.03	**7.24**
1989	4	30	0	2.10	0.26	0.49	0.04	**7.90**
1989	5	31	0	1.58	0.20	0.41	0.03	**6.05**
1989	6	30	0	1.24	0.31	0.41	0.03	**9.34**
1989	7	31	0	4.08	0.28	0.82	0.12	**8.39**
1989	8	31	0	2.27	0.28	0.52	0.05	**8.41**
1989	9	30	0	1.43	0.12	0.34	0.02	**3.72**
1989	10	31	0	1.76	0.17	0.39	0.03	**5.07**
1989	11	30	0	1.16	0.13	0.29	0.02	**3.90**
1989	12	31	0	1.59	0.13	0.35	0.02	**3.99**
1990	1	31	0	0.90	0.11	0.22	0.01	**3.42**
1990	2	28	0	0.90	0.11	0.21	0.01	**3.29**
1990	3	31	0	1.70	0.19	0.46	0.04	**5.58**
1990	4	30	0	0.36	0.05	0.10	0.00	**1.57**
1990	5	31	0	1.22	0.23	0.36	0.02	**6.87**
1990	6	30	0	0.65	0.07	0.18	0.01	**2.16**
1990	7	31	0	1.06	0.08	0.23	0.01	**2.40**
1990	8	31	0	1.34	0.22	0.39	0.03	**6.58**
1990	9	30	0	0.28	0.01	0.05	0.00	**0.31**
1990	10	31	0	2.28	0.19	0.46	0.04	**5.82**
1990	11	30	0	1.21	0.06	0.24	0.01	**1.89**
1990	12	31	0	0.76	0.09	0.18	0.01	**2.64**
1991	1	31	0	0.99	0.13	0.24	0.01	**3.96**
1991	2	28	0	0.30	0.03	0.07	0.00	**0.88**
1991	3	31	0	1.46	0.16	0.35	0.02	**4.88**
1991	4	30	0	1.88	0.20	0.52	0.05	**5.88**
1991	5	31	0	2.02	0.14	0.38	0.03	**4.15**
1991	6	30	0	2.13	0.12	0.41	0.03	**3.70**
1991	7	31	0	3.19	0.33	0.74	0.10	**10.05**
1991	8	31	0	1.02	0.19	0.31	0.02	**5.64**
1991	9	30	0	1.05	0.07	0.22	0.01	**2.23**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1991	10	31	0	0.94	0.05	0.18	0.01	**1.47**
1991	11	30	0	0.60	0.04	0.12	0.00	**1.20**
1991	12	31	0	0.87	0.09	0.22	0.01	**2.64**
1992	1	31	0	2.10	0.15	0.41	0.03	**4.60**
1992	2	29	0	0.93	0.07	0.19	0.01	**2.24**
1992	3	31	0	0.94	0.11	0.23	0.01	**3.23**
1992	4	30	0	1.68	0.08	0.30	0.02	**2.35**
1992	5	31	0	0.49	0.07	0.12	0.00	**2.21**
1992	6	30	0	2.01	0.17	0.45	0.04	**5.07**
1992	7	31	0	1.05	0.09	0.23	0.01	**2.83**
1992	8	31	0	2.92	0.36	0.72	0.09	**10.72**
1992	9	30	0	1.26	0.11	0.29	0.02	**3.36**
1992	10	31	0	2.46	0.14	0.46	0.04	**4.15**
1992	11	30	0	1.20	0.22	0.37	0.03	**6.51**
1992	12	31	0	1.99	0.12	0.36	0.02	**3.46**
1993	1	31	0	1.78	0.20	0.38	0.03	**5.87**
1993	2	28	0	0.76	0.08	0.18	0.01	**2.35**
1993	3	31	0	1.60	0.17	0.35	0.02	**5.23**
1993	4	30	0	1.63	0.13	0.34	0.02	**3.95**
1993	5	31	0	1.16	0.10	0.27	0.01	**3.04**
1993	6	30	0	0.45	0.04	0.10	0.00	**1.24**
1993	7	31	0	1.18	0.08	0.24	0.01	**2.28**
1993	8	31	0	0.69	0.05	0.14	0.00	**1.56**
1993	9	30	0	2.46	0.23	0.54	0.05	**6.95**
1993	10	31	0	1.20	0.15	0.30	0.02	**4.54**
1993	11	30	0	2.12	0.09	0.38	0.03	**2.59**
1993	12	31	0	0.79	0.12	0.21	0.01	**3.63**
1994	1	31	0	0.85	0.12	0.25	0.01	**3.74**
1994	2	28	0	1.01	0.10	0.25	0.01	**3.10**
1994	3	31	0	1.45	0.20	0.40	0.03	**5.85**
1994	4	30	0	0.50	0.06	0.13	0.00	**1.68**
1994	5	31	0	0.80	0.12	0.25	0.01	**3.46**
1994	6	30	0	0.84	0.08	0.17	0.01	**2.38**
1994	7	31	0	1.26	0.19	0.37	0.02	**5.82**
1994	8	31	0	1.00	0.08	0.20	0.01	**2.29**
1994	9	30	0	1.45	0.10	0.28	0.01	**2.89**
1994	10	31	0	1.30	0.09	0.28	0.01	**2.70**
1994	11	30	0	0.55	0.05	0.12	0.00	**1.64**
1994	12	31	0	0.24	0.03	0.06	0.00	**1.04**
1995	1	31	0	1.14	0.12	0.25	0.01	**3.49**
1995	2	28	0	2.25	0.18	0.45	0.04	**5.41**
1995	3	31	0	1.65	0.13	0.33	0.02	**3.86**
1995	4	30	0	0.50	0.04	0.12	0.00	**1.14**
1995	5	31	0	0.79	0.11	0.22	0.01	**3.34**
1995	6	30	0	1.90	0.27	0.43	0.03	**7.97**
1995	7	31	0	3.10	0.24	0.66	0.08	**7.09**
1995	8	31	0	2.77	0.13	0.50	0.04	**3.75**
1995	9	30	0	1.10	0.14	0.28	0.01	**4.14**
1995	10	31	0	2.55	0.21	0.52	0.05	**6.34**
1995	12	31	0	0.73	0.07	0.18	0.01	**2.01**
1996	1	26	0	1.58	0.17	0.36	0.03	**5.05**
1996	2	29	0	0.94	0.08	0.20	0.01	**2.44**
1996	3	31	0	1.08	0.10	0.25	0.01	**2.96**
1996	4	30	0	0.52	0.09	0.15	0.00	**2.56**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
1996	5	31	0	1.24	0.16	0.34	0.02	**4.80**
1996	6	30	0	1.10	0.13	0.29	0.02	**3.89**
1996	7	31	0	2.56	0.28	0.53	0.05	**8.42**
1996	8	31	0	0.71	0.06	0.15	0.00	**1.82**
1996	9	30	0	3.94	0.34	0.85	0.13	**10.17**
1996	10	31	0	1.70	0.12	0.40	0.03	**3.62**
1996	11	30	0	0.71	0.10	0.21	0.01	**2.99**
1996	12	31	0	0.99	0.13	0.25	0.01	**3.77**
1997	1	31	0	1.00	0.09	0.21	0.01	**2.81**
1997	2	28	0	0.92	0.09	0.21	0.01	**2.56**
1997	3	31	0	0.93	0.11	0.21	0.01	**3.27**
1997	4	30	0	0.83	0.10	0.20	0.01	**2.85**
1997	5	31	0	0.45	0.04	0.09	0.00	**1.21**
1997	6	30	0	0.82	0.10	0.19	0.01	**3.05**
1997	7	31	0	1.54	0.20	0.41	0.03	**5.95**
1997	8	31	0	1.41	0.08	0.27	0.01	**2.33**
1997	9	30	0	1.45	0.13	0.30	0.02	**4.04**
1997	10	31	0	0.52	0.05	0.12	0.00	**1.52**
1997	11	30	0	0.86	0.11	0.24	0.01	**3.23**
1997	12	31	0	1.17	0.15	0.30	0.02	**4.58**
1998	1	31	0	1.24	0.23	0.37	0.02	**6.94**
1998	2	28	0	2.16	0.21	0.51	0.05	**6.39**
1998	3	31	0	3.66	0.21	0.66	0.08	**6.21**
1998	4	30	0	0.79	0.12	0.20	0.01	**3.49**
1998	5	31	0	0.53	0.07	0.13	0.00	**2.23**
1998	6	30	0	0.42	0.05	0.12	0.00	**1.64**
1998	7	31	0	1.38	0.18	0.39	0.03	**5.49**
1998	8	31	0	4.94	0.21	0.88	0.14	**6.40**
1998	9	30	0	1.69	0.15	0.39	0.03	**4.45**
1998	10	31	0	1.62	0.08	0.31	0.02	**2.46**
1998	11	30	0	0.71	0.09	0.20	0.01	**2.55**
1998	12	31	0	1.70	0.13	0.33	0.02	**4.00**
1999	1	31	0	1.74	0.23	0.51	0.05	**6.84**
1999	2	27	0	0.63	0.06	0.14	0.00	**1.86**
1999	3	31	0	0.60	0.09	0.16	0.00	**2.55**
1999	4	30	0	1.00	0.08	0.22	0.01	**2.42**
1999	5	31	0	1.06	0.09	0.25	0.01	**2.63**
1999	6	30	0	0.90	0.05	0.17	0.01	**1.56**
1999	7	31	0	1.78	0.14	0.36	0.02	**4.20**
1999	8	31	0	1.34	0.11	0.32	0.02	**3.41**
1999	9	30	0	9.53	0.82	1.92	0.68	**24.62**
1999	10	31	0	4.95	0.21	0.88	0.14	**6.22**
1999	11	30	0	1.58	0.06	0.28	0.01	**1.71**
1999	12	31	0	0.45	0.04	0.11	0.00	**1.27**
2000	1	31	0	1.46	0.18	0.35	0.02	**5.38**
2000	2	29	0	0.95	0.07	0.19	0.01	**2.07**
2000	3	31	0	0.95	0.08	0.22	0.01	**2.49**
2000	4	30	0	0.71	0.11	0.19	0.01	**3.15**
2000	5	31	0	0.81	0.04	0.14	0.00	**1.14**
2000	6	30	0	1.15	0.10	0.23	0.01	**2.96**
2000	7	31	0	1.78	0.15	0.35	0.02	**4.37**
2000	8	31	0	2.00	0.17	0.41	0.03	**5.10**
2000	9	30	0	2.60	0.23	0.55	0.05	**6.93**
2000	10	31	0	0.00	0.00	0.00	0.00	**0.00**

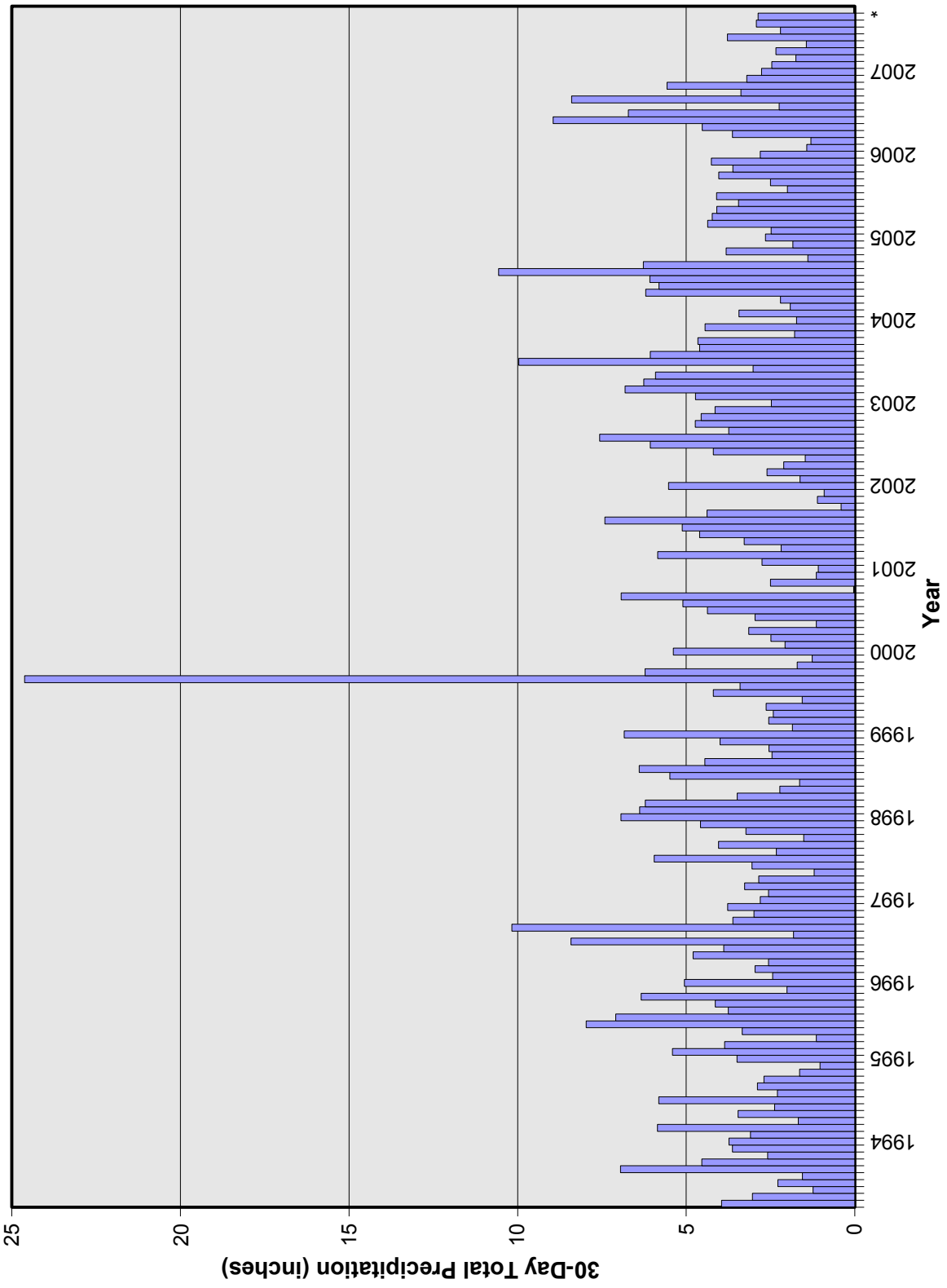
Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
2000	11	30	0	1.10	0.08	0.24	0.01	**2.50**
2000	12	30	0	0.30	0.04	0.08	0.00	**1.14**
2001	1	31	0	0.30	0.04	0.08	0.00	**1.08**
2001	2	28	0	0.63	0.09	0.19	0.01	**2.75**
2001	3	31	0	2.22	0.19	0.48	0.04	**5.85**
2001	4	30	0	0.92	0.07	0.19	0.01	**2.19**
2001	5	31	0	1.20	0.11	0.24	0.01	**3.28**
2001	6	30	0	1.92	0.15	0.45	0.04	**4.60**
2001	7	29	0	1.59	0.17	0.39	0.03	**5.12**
2001	8	31	0	3.30	0.25	0.78	0.11	**7.41**
2001	9	29	0	1.98	0.15	0.47	0.04	**4.39**
2001	10	31	0	0.35	0.01	0.06	0.00	**0.41**
2001	11	30	0	0.60	0.04	0.14	0.00	**1.11**
2001	12	31	0	0.52	0.03	0.10	0.00	**0.91**
2002	1	31	0	1.30	0.18	0.36	0.02	**5.53**
2002	2	28	0	1.17	0.05	0.22	0.01	**1.63**
2002	3	31	0	1.08	0.09	0.22	0.01	**2.60**
2002	4	30	0	1.52	0.07	0.28	0.01	**2.11**
2002	5	31	0	0.73	0.05	0.14	0.00	**1.47**
2002	6	30	0	1.32	0.14	0.34	0.02	**4.20**
2002	7	31	0	2.75	0.20	0.53	0.05	**6.07**
2002	8	31	0	5.20	0.25	0.92	0.15	**7.57**
2002	9	30	0	1.83	0.12	0.35	0.02	**3.74**
2002	10	31	0	1.93	0.16	0.38	0.03	**4.73**
2002	11	30	0	1.93	0.15	0.40	0.03	**4.56**
2002	12	27	0	0.98	0.14	0.30	0.02	**4.14**
2003	1	31	0	0.69	0.08	0.18	0.01	**2.48**
2003	2	28	0	1.04	0.16	0.28	0.02	**4.73**
2003	3	31	0	1.70	0.23	0.41	0.03	**6.81**
2003	4	30	0	1.31	0.21	0.38	0.03	**6.26**
2003	5	31	0	2.12	0.20	0.45	0.04	**5.91**
2003	6	29	0	1.25	0.10	0.24	0.01	**3.02**
2003	7	31	0	3.90	0.33	0.83	0.12	**9.97**
2003	8	31	0	1.25	0.20	0.36	0.02	**6.07**
2003	9	30	0	2.61	0.15	0.48	0.04	**4.60**
2003	10	31	0	3.12	0.16	0.57	0.06	**4.65**
2003	11	30	0	1.21	0.06	0.22	0.01	**1.79**
2003	12	31	0	1.37	0.15	0.36	0.02	**4.44**
2004	1	31	0	0.72	0.06	0.16	0.00	**1.73**
2004	2	29	0	0.60	0.11	0.18	0.01	**3.43**
2004	3	31	0	0.85	0.06	0.17	0.01	**1.92**
2004	4	30	0	0.61	0.07	0.15	0.00	**2.21**
2004	5	30	0	4.00	0.21	0.73	0.10	**6.20**
2004	6	30	0	1.95	0.19	0.43	0.03	**5.81**
2004	7	31	0	2.13	0.20	0.52	0.05	**6.08**
2004	8	31	0	2.28	0.35	0.65	0.08	**10.57**
2004	9	30	0	1.75	0.21	0.42	0.03	**6.27**
2004	10	31	0	0.79	0.05	0.15	0.00	**1.39**
2004	11	30	0	1.54	0.13	0.35	0.02	**3.82**
2004	12	31	0	0.76	0.06	0.16	0.00	**1.84**
2005	1	31	0	1.32	0.09	0.26	0.01	**2.65**
2005	2	28	0	0.61	0.08	0.17	0.01	**2.49**
2005	3	31	0	1.50	0.15	0.30	0.02	**4.36**
2005	4	30	0	1.66	0.14	0.36	0.02	**4.23**

Table D-1: Monthly precipitation, Wilson COOP 319476

Year	Month	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
2005	5	31	0	1.47	0.14	0.36	0.02	**4.09**
2005	6	30	0	1.05	0.12	0.25	0.01	**3.45**
2005	7	31	0	1.53	0.14	0.31	0.02	**4.10**
2005	8	31	0	1.03	0.07	0.21	0.01	**2.00**
2005	9	30	0	0.94	0.08	0.23	0.01	**2.50**
2005	10	31	0	2.05	0.13	0.39	0.03	**4.04**
2005	11	30	0	1.73	0.12	0.33	0.02	**3.62**
2005	12	31	0	1.04	0.14	0.27	0.01	**4.26**
2006	1	31	0	0.93	0.09	0.20	0.01	**2.81**
2006	2	28	0	0.52	0.05	0.12	0.00	**1.43**
2006	3	31	0	0.95	0.04	0.17	0.01	**1.31**
2006	4	30	0	0.86	0.12	0.24	0.01	**3.63**
2006	5	31	0	1.72	0.15	0.37	0.02	**4.53**
2006	6	30	0	3.68	0.30	0.73	0.10	**8.95**
2006	7	31	0	2.84	0.22	0.61	0.07	**6.72**
2006	8	31	0	0.70	0.07	0.16	0.00	**2.25**
2006	9	30	0	4.65	0.28	0.87	0.14	**8.40**
2006	10	31	0	1.41	0.11	0.34	0.02	**3.38**
2006	11	30	0	1.47	0.19	0.39	0.03	**5.57**
2006	12	31	0	2.00	0.11	0.37	0.02	**3.20**
2007	1	31	0	1.03	0.09	0.22	0.01	**2.77**
2007	2	28	0	0.80	0.08	0.22	0.01	**2.46**
2007	3	31	0	1.03	0.06	0.20	0.01	**1.75**
2007	4	30	0	1.34	0.08	0.26	0.01	**2.34**
2007	5	31	0	0.87	0.05	0.16	0.00	**1.44**
2007	6	30	0	1.45	0.13	0.35	0.02	**3.78**
2007	7	31	0	0.79	0.07	0.20	0.01	**2.21**
2007	8	30	0	1.30	0.10	0.28	0.01	**2.92**
2007	9	28	0	1.96	0.10	0.38	0.03	**2.87**
2007	10	10	0	0.59	0.11	0.21	0.01	**3.33**

NOTE: In order to compensate for the variable number of days in a month as well as the presence of missing data in some months, a monthly total precipitation was standardized to the so-called “30-day average total”, which was calculated by multiplying the average daily water precipitation for a given month by 30 in order to remove a likely bias caused by the above conditions.



Graph D-1: Monthly precipitation, Wilson COOP 319476

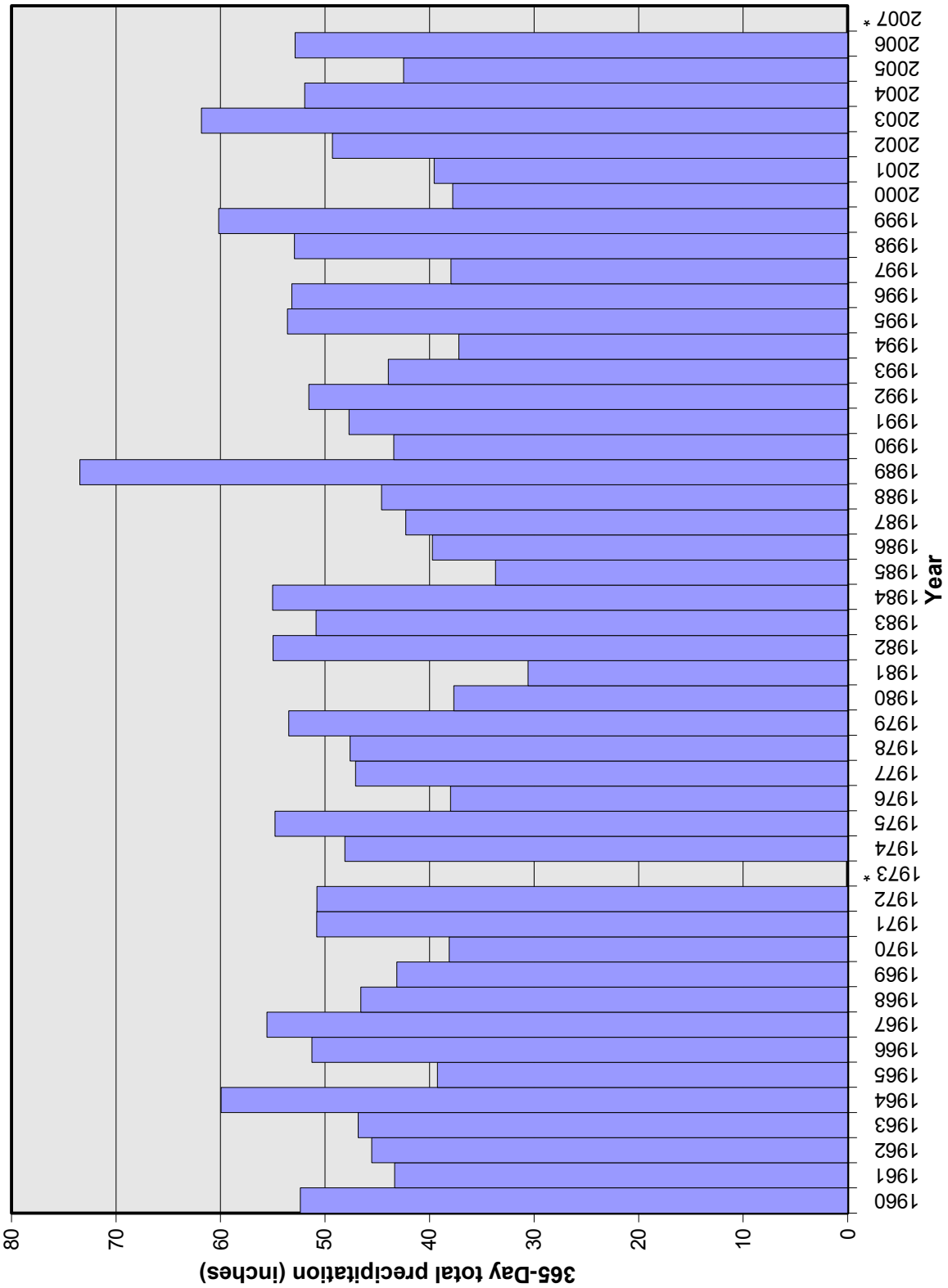
NOTE: Months with available data of less than 25 were marked insufficient,further denoted with *, and are not presented in this graph

Table D-2: Annual precipitation, Wilson COOP 319476

Year	Months	Days	Low	High	Daily Average	Std. Dev.	Std. Err.	365-Day Average Total
1960	12	366	0	7.42	0.14	0.51	0.01	**52.37**
1961	12	365	0	3.07	0.12	0.30	0.00	**43.35**
1962	12	365	0	1.89	0.12	0.30	0.00	**45.54**
1963	12	364	0	3.16	0.13	0.37	0.01	**46.82**
1964	12	366	0	3.50	0.16	0.48	0.01	**59.95**
1965	12	365	0	2.75	0.11	0.34	0.01	**39.25**
1966	12	365	0	2.94	0.14	0.37	0.01	**51.25**
1967	12	365	0	3.14	0.15	0.42	0.01	**55.57**
1968	12	366	0	4.12	0.13	0.39	0.01	**46.58**
1969	12	365	0	2.85	0.12	0.34	0.01	**43.13**
1970	12	365	0	1.73	0.10	0.26	0.00	**38.11**
1971	12	365	0	2.82	0.14	0.36	0.01	**50.79**
1972	11	335	0	2.19	0.14	0.34	0.01	**50.77**
1973	10	292	0	1.97	0.11	0.29	0.01	**40.87**
1974	12	365	0	1.67	0.13	0.30	0.00	**48.10**
1975	12	365	0	4.08	0.15	0.39	0.01	**54.78**
1976	12	366	0	2.08	0.10	0.29	0.00	**38.01**
1977	12	365	0	3.88	0.13	0.43	0.01	**47.08**
1978	12	365	0	1.95	0.13	0.34	0.01	**47.60**
1979	12	365	0	5.38	0.15	0.44	0.01	**53.47**
1980	12	366	0	1.84	0.10	0.25	0.00	**37.69**
1981	12	365	0	1.42	0.08	0.23	0.00	**30.58**
1982	12	365	0	3.77	0.15	0.39	0.01	**54.97**
1983	12	365	0	3.45	0.14	0.38	0.01	**50.87**
1984	12	366	0	3.21	0.15	0.41	0.01	**55.01**
1985	12	364	0	2.10	0.09	0.26	0.00	**33.69**
1986	12	365	0	3.15	0.11	0.32	0.01	**39.73**
1987	12	365	0	2.24	0.12	0.31	0.01	**42.27**
1988	12	366	0	2.77	0.12	0.30	0.00	**44.60**
1989	12	365	0	4.08	0.20	0.45	0.01	**73.46**
1990	12	365	0	2.28	0.12	0.30	0.00	**43.42**
1991	12	365	0	3.19	0.13	0.37	0.01	**47.71**
1992	12	366	0	2.92	0.14	0.39	0.01	**51.56**
1993	12	365	0	2.46	0.12	0.31	0.01	**43.94**
1994	12	365	0	1.45	0.10	0.25	0.00	**37.21**
1995	11	335	0	3.10	0.15	0.40	0.01	**53.60**
1996	12	361	0	3.94	0.15	0.39	0.01	**53.17**
1997	12	365	0	1.54	0.10	0.25	0.00	**37.95**
1998	12	365	0	4.94	0.15	0.44	0.01	**52.93**
1999	12	364	0	9.53	0.16	0.69	0.03	**60.17**
2000	12	365	0	2.60	0.10	0.29	0.00	**37.78**
2001	12	362	0	3.30	0.11	0.37	0.01	**39.56**
2002	12	361	0	5.20	0.14	0.42	0.01	**49.30**
2003	12	364	0	3.90	0.17	0.44	0.01	**61.83**
2004	12	365	0	4.00	0.14	0.40	0.01	**51.94**
2005	12	365	0	2.05	0.12	0.30	0.00	**42.48**
2006	12	365	0	4.65	0.14	0.45	0.01	**52.87**
2007	10	280	0	1.96	0.08	0.26	0.00	**30.73**

NOTE: In order to compensate for the variable number of days in a year as well as the presence of missing data in some years, an annual total precipitation was standardized to a so-called “365-day average total”, which was calculated by multiplying the average daily precipitation for a given year by 365 in order to remove a likely bias caused by the above conditions.

Graph D-2: Annual precipitation, Wilson COOP 319476

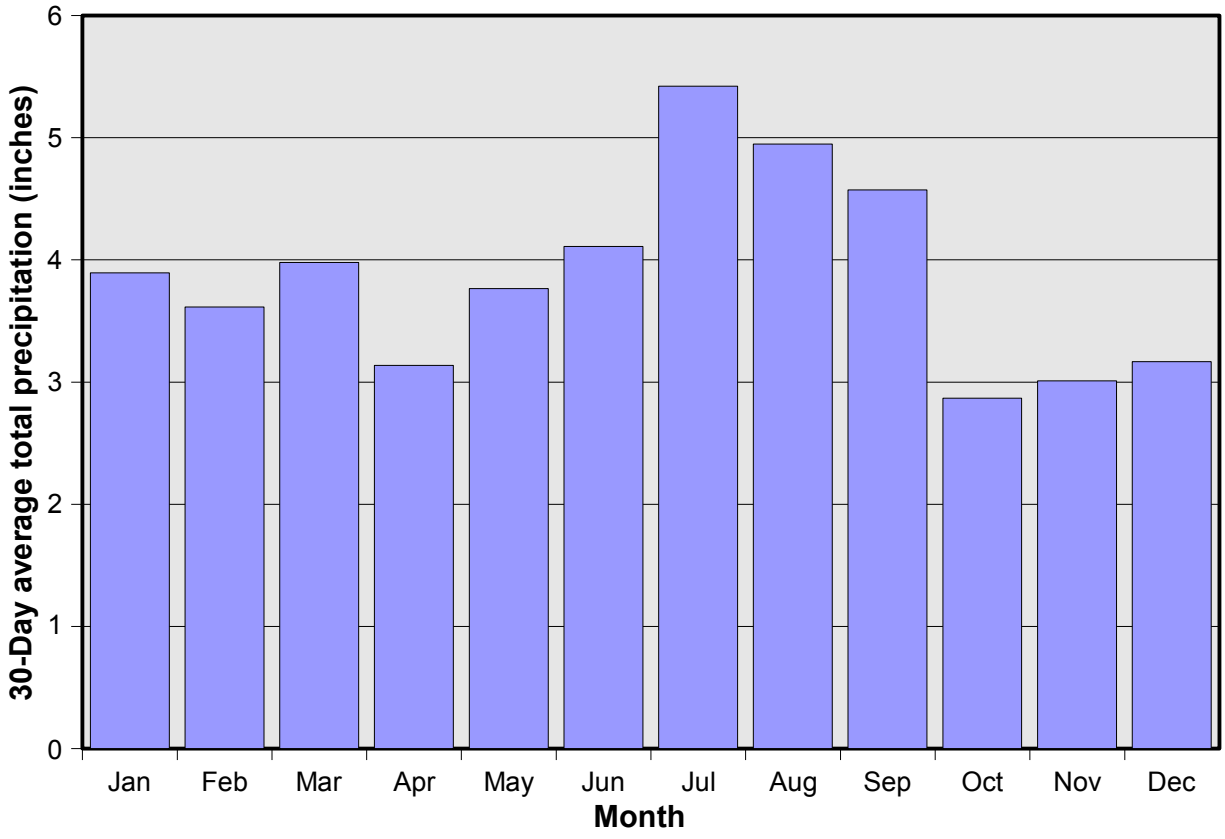


NOTE: Years with available data of less than 300 were marked insufficient,further denoted with *, and are not presented in this graph

Table D-3: Precipitation by month, Wilson COOP 319476

Month	Total	Day Count	Daily Average	Std. Dev.	Std. Err.	30-Day Average Total
Jan	188.3	1451	0.13	0.3	0.01	**3.89**
Feb	159.86	1327	0.12	0.28	0.01	**3.61**
Mar	195.56	1474	0.13	0.33	0.01	**3.98**
Apr	150.55	1440	0.1	0.28	0.01	**3.14**
May	186.67	1487	0.13	0.33	0.01	**3.77**
Jun	197.1	1439	0.14	0.37	0.01	**4.11**
Jul	268.39	1485	0.18	0.5	0.01	**5.42**
Aug	245.27	1487	0.16	0.46	0.01	**4.95**
Sep	219.02	1437	0.15	0.52	0.01	**4.57**
Oct	140.26	1467	0.1	0.35	0.01	**2.87**
Nov	138.49	1380	0.1	0.3	0.01	**3.01**
Dec	150.07	1421	0.11	0.28	0.01	**3.17**

Graph D-3: Precipitation by month, Wilson COOP 319476

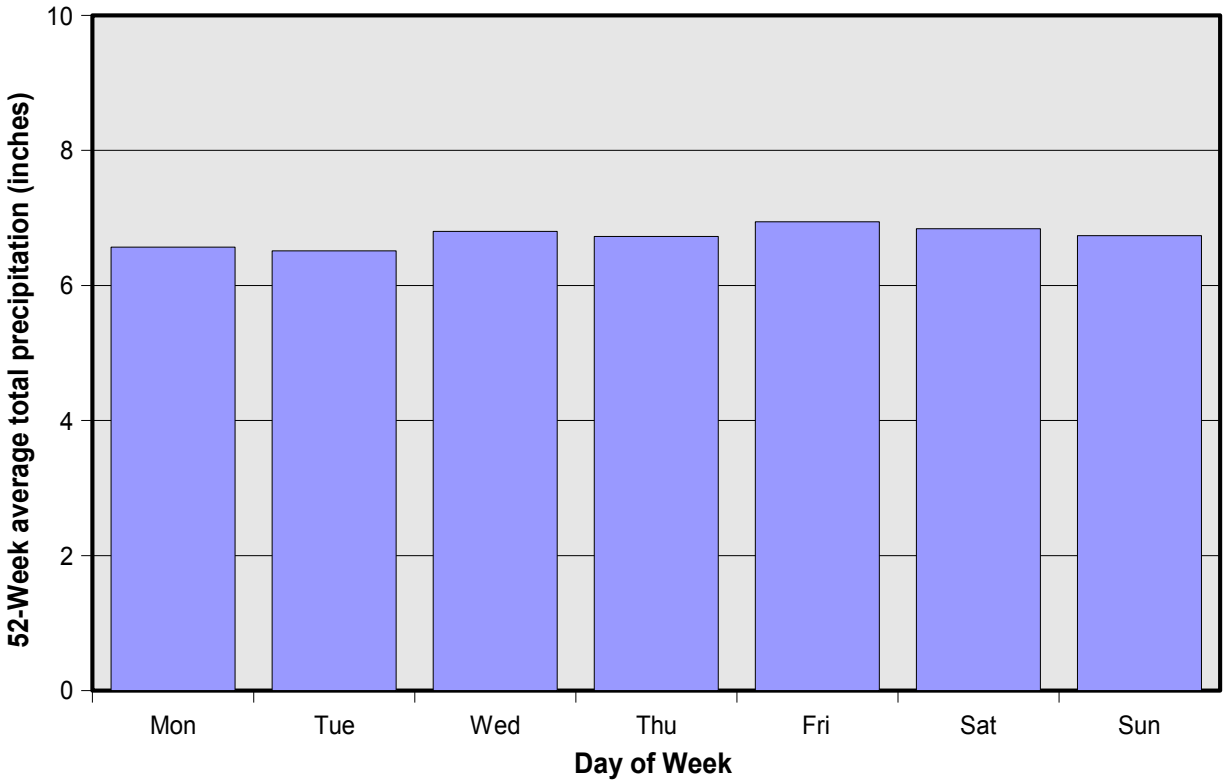


NOTE: The 30-day aveage total precipitaion for a month was calculated by multiplying its dail average precipitation by 30 in order to elmiinate the slight bias die to the inconsistent number of days in different months.

Table D-4: Precipitation by weekday, Wilson COOP 319476

Day	Total	Day Count	Daily Average	Std. Dev.	Std. Error	52-Week Average Total
Mon	312.16	2471	0.13	0.37	0.003	**6.569**
Tue	309.48	2471	0.13	0.36	0.003	**6.513**
Wed	323.35	2472	0.13	0.35	0.002	**6.802**
Thu	318.98	2466	0.13	0.40	0.003	**6.726**
Fri	329.95	2471	0.13	0.39	0.003	**6.944**
Sat	325.36	2473	0.13	0.37	0.003	**6.841**
Sun	320.26	2471	0.13	0.36	0.003	**6.740**

Graph D-4: Precipitation by weekday, Wilson COOP 319476



Ground and Surface Water Sampling and Analysis Plan

Prepared for

Wayne County Subtitle D Landfill
Dudley, North Carolina

MESCO Project Number: G06096.6

This report is included as an Appendix E part of the Design Hydrogeologic Study completed for the Wayne County Subtitle D Landfill, Phase 3.

Municipal Engineering Services Company, P.A.
Garner, Boone and Morehead City, North Carolina

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Plate B ..... Typical Monitoring Well
Plate C ..... Graphical Plot of Standing Volumes of Water

1 INTRODUCTION

1.1 Objective

The objective of the Ground and Surface Water Sampling and Analysis Plan is to provide clear guidelines and procedures for field and laboratory personnel when obtaining and testing ground and surface water samples. This plan applies to all the Phase 1, Phase 2 and Phase 3 portions of the Wayne County Subtitle D Landfill. The sampling procedures outlined in this analysis plan are guidelines by which sampling will be performed. Deviation from the procedures may be warranted depending on facility conditions or unforeseen sampling variables. Alternative sampling procedures must conform to the N.C. Water Quality Monitoring Guidance Document for Solid Waste Facilities (Guidance Document).

Four (4) independent sampling events of monitoring wells MW-14, MW-15 and MW-16 will be taken within six (6) months of the date of issuance of the Permit to Operate for the Phase 3 disposal area, with at least one (1) sampling event occurring prior to receiving waste. The results of these sampling events will be used as baseline water quality information for the subsequent sampling events of Phase 3. Ground and surface water monitoring points will be sampled semi-annually thereafter for the Appendix I list of constituents. In addition to the Appendix I list of constituents; the leachate sample will also be tested for biochemical oxygen demand (BOD) chemical oxygen demand (COD), nitrate, nitrite, sulfate, total phosphorus, and pH.

1.2 Summary of Wells

This monitoring plan consists of sixteen (16) monitoring wells numbered sequentially MW-1 through MW-16, four (4) surface water monitoring points numbered SW-2, SW-3, SW-4 and SW-5, and one (1) leachate collection point. The placement of these wells was decided based on the general direction of the groundwater flow within and surrounding the facility footprint, as well as the regulatory compliance boundaries defined in Rule 15A NCAC 13B.1631 (a)(2)(A). Three (3) monitoring wells MW-14, MW-15, MW-16, have recently been incorporated into the monitoring plan for the inclusion of Phase 3. MW-14 will be converted from piezometer P3-16, MW-15 will be converted from piezometer P3-18S, and MW-16 will be converted from piezometer P3-1. Phase 1 and 2 monitoring wells will continue to be employed for monitoring purposes. A list of all new monitoring points included in this plan is provided as Table E-1.

MW-1, the background well for the entire facility, is located in the northeastern section of the property approximately 150 feet from the boundary of the Phase 3 disposal area. The groundwater in this area exhibits southwesterly flow towards the waste area; therefore, MW-1 provides background water quality for all the downgradient wells of the landfill, helping to differentiate landfill leakage from potential contaminant migration originating upgradient of the facility.

MW-2 is located immediately downgradient of the sump in the eastern portion of Phase 1; it is designed to detect a liner breach in the sump area. Groundwater flows southwest towards the wetland.

MW-3 is located directly downstream of an old drainage feature, located south of Phase 1's southernmost border. This drainage feature was graded with fill material during the construction of Phase 1; however the area may still act as a conduit for groundwater under the condition that the fill hydraulic conductivity is higher than the native material.

MW-4, MW-5 and MW-10 are all within the vicinity of the leachate lagoon positioned to detect any failure. Drainage and groundwater flow in this area are controlled by nearby Edwards Branch and its unnamed tributary. These three wells were specifically placed to intercept downgradient flow of the rapidly moving groundwater in all directions before reaching neighboring streams. MW-4 is located 150 feet south of the western border to observe southwesterly flow from the lagoon. MW-5 is located 40 feet from the western corner and is positioned to intercept westerly flow. MW-10 is 70 feet from the southern border and monitors southerly flow towards the unnamed tributary.

MW-6 is hydraulically upgradient of the leachate lagoon but downgradient of Phase 1, and serves as a background well for the lagoon. The groundwater flow is westerly, and should detection occur in any downgradient monitoring points MW-6 will help determine the origin of the contamination.

MW-7 is located west of Phase 1 adjacent to two small drainage features that empty into Edwards Branch, monitoring westerly groundwater flow towards the creek.

MW-8, MW-9 and MW-12 are downgradient of the sump, designed to detect possible liner leaks in the sump area. MW-8 is downgradient of the sump near the northern corner of Phase 1 where groundwater flows west towards Edwards Branch. MW-9 is downgradient of the sump south of Phase 1 where groundwater flows west to southwest. MW-12 is located 120 feet west of the northwestern corner of Phase 2 immediately downgradient of the western sump where the groundwater flows west towards Edwards Branch.

MW-11 is located west of Phase 2, monitoring the groundwater that flows northwest through the middle of the Phase 2 area before reaching Edwards Branch.

MW-13 is east of the landfill 180 feet from the southern border of Phase2. This well monitors groundwater flowing through the easternmost portion of Phase 2, southwest, parallel to the unnamed tributary towards the marshy area east of the main access road.

MW-14 and MW-15 are located west of the Phase 3 area monitoring westerly groundwater flow before reaching the wetlands and Edwards Branch.

MW-16 is located east of the Phase 3 between MW-13 and MW-1. The groundwater flow is south westerly serving primarily as an additional background/review well.

Phase 3 will tie into the existing leachate lagoon established for Phase 1 and 2. Surface water tributaries off Edwards Branch will be monitored. SW-2 monitors the wetland area near MW-2, SW-3 monitors the southern tributary of Edwards Branch before it joins Edwards Branch, SW-4 will monitor Edwards Branch after the confluence with the small southern tributary, and SW-5 monitors Edwards Branch past the Phase 3 disposal area, as an upstream monitoring point. Locations of the sampling points are shown on Plate A.

1.3 Sampling Equipment

Groundwater samples will be obtained in the field using laboratory cleaned stainless steel bailers. Each bailer will be sanitized in a laboratory environment, prior to sampling, in accordance with the following procedures as prescribed in the Guidance Document:

1. Phosphate-free, soap tap water wash.
2. Tap water rinse.
3. De-ionized or distilled water rinse.
4. Isopropyl alcohol rinse.
5. De-ionized or distilled water rinse.
6. Air dry.
7. Aluminum foil wrap, shiny side out.

Alternative sampling equipment, such as disposable Teflon bailers may be warranted; all alternative equipment and procedures must conform to the Guidance Document. The standard equipment necessary to conduct sampling for each well consists of sample containers (including trip blanks and equipment blanks), one wide-mouth container, at least two 600-ft spools of 1/4-inch nylon rope, at least two boxes of nitrile gloves, one box of large plastic bags, temperature indicator, pH indicator, conductivity indicator, water level indicator, storage coolers, and ice. If the total depth of all wells to be sampled exceeds 1,200 feet, additional spools of rope will

be required to complete the sampling. If the number of wells to be sampled exceeds one third of the number of pairs of gloves in stock, additional boxes of gloves will be necessary. The bailers, wrapped in foil and plastic, will be transported between pieces of peaked foam rubber to prevent damage to the wrappings. All equipment subject to damage and contamination will be transported in sealed, plastic bags. The water level indicator will be cleaned in accordance with Steps 2 and 3 described above prior to placement in a clean plastic bag.

1.4 Sampling Containers

Ground and surface water monitoring will include organic (Volatile Organic Compounds) and inorganic (Metals) analysis. Samples will be collected for the various analyses in laboratory supplied containers.

1. Each sample container will be clearly labeled providing the following information: site name, county location, sample identification number, parameters to be analyzed, preservative added, date and time of sampling, and initials of the sampler.
2. Samples to be analyzed for organic content will be collected first in three 40-ml glass vials with Teflon caps. The sample vials will be completely filled to create zero head space in the vials.
3. Samples to be analyzed for inorganic contamination will be collected second in a quart/1-liter polyethylene container.

All sample containers will be obtained from an independent laboratory in a sterilized condition. Some of the containers will have a pre-measured amount of preservative in them as necessary. In this event, care will be taken not to rinse the container or allow the preservative to wash out during sampling.

2 SAMPLING

Wells will be sampled from upgradient to downgradient, or when previous analytical data is available, from lowest to greatest contamination. This procedure is required to limit the potential of cross contamination between sampling points.

2.1 Set-Up

A clean sheet of plastic will be placed around the well to provide a clean surface for sampling equipment. The total well depth read from the well tag and the measured depth to water, determined using the water level indicator, will be used to compute the depth of water in the well. The total well depth will be measured and compared to the depth indicated on the well tag as a check for siltation or blockage at depth. The amount of standing water will be calculated by subtracting the depth to water from total well depth. Gallons of water in the well, as compared to well diameter, will be determined using the chart on Plate C. For example, if a two-inch well is 29 feet deep and has a measured depth to water of 10 feet, there are 19 feet of standing water or 3.3 gallons in the well.

Purging will be performed to remove stagnant water from the well, and to introduce fresh groundwater for sampling. Each well will be purged of three to five volumes of standing water (well volumes), or until dry if this cannot be achieved. Indicator parameters such as pH, temperature and specific conductance will be measured during purging as an indication that groundwater representative of the formation surrounding a given well is being sampled. Purging is considered complete when at least three well volumes have been purged and indicator parameters have stabilized such that three successive readings vary by no more than 10%. Purging may need to be continued beyond five well volumes if indicator parameters have not stabilized. All information will be recorded on a field data sheet or in a field logbook with copies submitted to the Division of Waste Management with the analytical results.

All meters used to monitor purge parameters will be calibrated immediately prior to purging and sampling, and those readings recorded in a field logbook. The meters should be recalibrated at the end of each sampling event and those readings recorded in the log also. Entries will always include pre- and post- calibration readings as well as the model and serial number of the equipment and the date, time, and person performing the calibration(s). Two standards, which bracket the average or suspected measurements for pH and specific conductance, will be used at the site. Additionally, if an equipment blank needs to be run, it should be done before any sampling is started.

2.2 Purging

After determining the amount of water to be purged from a well, the equipment necessary for purging will be assembled at the well including bailer twine, a 5-gallon bucket, bailer, and gloves. With the wrapped bailer maintained in a stable, upright position, pull away the top portion of aluminum foil exposing only the eyelet used for securing rope to the bailer. After the twine has been secured to the bailer with gloved hands, the bailer will be suspended as the remaining plastic and aluminum foil are removed. The gloves used to remove the aluminum foil and plastic will be considered contaminated and may not come in contact with the bailer or the rope. The bailer will be lowered slowly into the well using uncontaminated gloves, until the bailer contacts groundwater. The bailer rope will then be cut to an adequate length and secured to prevent loss of the bailer in the well. The gloves will again be discarded and a new pair will be used during purging.

At no time during purging will the bailer twine be allowed to touch the ground. In order to not allow the rope to touch the ground during purging, the rope will be collected when raising the bailer either by loops gathered in one hand or by alternating hand-to-hand as the bailer is pulled from the well. When purging deep wells (in excess of 40 feet), the ground and the well head may be covered with a clean plastic bag or sheet of plastic with a slit cut to allow the plastic to slide over the well head. This will be a separate sheet of plastic from the

one used for the sampling equipment. The plastic will be placed over the sampler's boots to allow the rope to fall onto the plastic without contamination. Alternatively, the twine may be lowered into an open bag placed in a 5-gallon bucket beside the well head.

If purging and sampling of a well are performed at separate times, the bailer will be left suspended in the well, above the water table, with the rope secured. The remaining rope will be doubled and grasped in a tight loop in one hand. Using the free hand, take the glove on the hand holding the rope and remove it by pulling away from the hand and over the rope into an inside-out position encasing the rope in the glove. The rope will be transferred to the opposite hand and the procedure will be repeated to cover any portion of the rope remaining uncovered. The glove-encased rope will be set on top of the well head until time to sample. Alternatively, the rope remaining after securing may be gathered in a tight loop and pushed into the 2-inch PVC well pipe and left. Even when sampling immediately follows purging, new gloves will be necessary.

2.3 Groundwater Sample Collection

The bailer will be lowered slowly into the well to avoid volatizing any dissolved-phase compounds that may be present in the groundwater. Once full, the bailer will be retrieved and containers filled by emptying the water through the hole at the bottom of the bailer. Glass 40-mL vials for VOC analyses will be filled in such a manner as to produce zero headspace in the vials. Polyethylene containers for metals analyses will be filled and sealed with the cap, leaving about ½-inch of airspace at the top. In addition to collecting the samples, water will be collected in the wide-mouth container for pH, temperature, and conductivity measurements. Upon completion of sampling, sample containers will be placed in labeled and sealed plastic bags, including equipment and trip blanks, and stored in ice-filled coolers to chill the samples to 4°C pending transport to a NCDENR-certified analytical laboratory. The contaminated nitrile gloves and rope will be discarded.

2.4 Surface Water Sample Collection

Surface water sampling will be taken with given consideration to minimize turbulence and aeration. Surface water sample containers will be handled with gloves on, keeping one hand near the base; containers will be dipped at location points with extreme caution in order to avoid contamination at the mouth of the container, pushing rapidly at an angle into the water, mouth up, and tilted towards the stream current to fill, so as not to lose any of the preservative into the surrounding water. If there is little current movement, the container will be moved slowly through the water laterally. During times of drought, if the water is not deep enough to allow filling of the container, a pool may be scooped out of the bottom of the stream to obtain a sample. The pool will be allowed to clear before sampling. All containers will be filled and treated in the same manner as the groundwater samples. The samples will be sealed in labeled, plastic bags, and stored in an ice-filled cooler to chill the samples to 4°C pending transport to a NCDENR-certified analytical laboratory. In addition to

collecting the samples, water will be collected in the wide-mouth container for pH, temperature, and conductivity measurements.

2.5 Leachate Sampling

The Phase 3 leachate will be pumped along the waste boundary to connect with the Phase 1 and 2 leachate. All three will be sampled together at the current leachate sampling sites. Leachate will be obtained from the end of the inflow pipe in the leachate lagoon as well as at the pump station in the northern corner of Phase 2. No new leachate collection locations will be added. When collecting leachate samples, sample containers will be handled with extreme caution in order to avoid contamination at the mouth of the container. Containers will be filled by being held directly under the spigot. All containers will be filled in the same manner and treated the same as the groundwater samples. The samples will be sealed in labeled, plastic bags, and stored in an ice-filled cooler to chill the samples to 4°C pending transport to a NCDENR-certified analytical laboratory. In addition to collecting the samples, water will be collected in the wide-mouth container for pH, temperature, and conductivity measurements.

2.6 Chain-of-custody

Chain-of-custody forms will be used to document the handling of all samples collected and listing all individuals who have taken possession of a given set of samples, including field personnel, laboratory couriers, and laboratory personnel. Trip blanks, equipment blanks, and sample containers will all travel and be stored together. Trip blanks will remain in the condition they are received from the laboratory and will not be opened or tampered with during the sampling. A chain-of-custody record will be completed for each day's samples, indicating the date and time, sample location, sample matrix (soil, water, etc.), and laboratory analyses to be conducted. In addition, a field sampling data sheet will be completed indicating the depth to water, pH, temperature, and specific conductivity of the sample measured in the field at each well sampled.

3 ANALYSIS

When the water samples reach the laboratory, they will be transferred to a sample custodian who will sign the chain-of-custody documentation as receipt of the samples. Internal control of the water samples in the laboratory will be in accordance with QA/QC procedures for the laboratory. Copies of QA/QC manuals for approved laboratories are on file at the Division of Solid Waste.

Groundwater, surface water and leachate will be analyzed for the Appendix I list of chemical constituents; QA/QC procedures utilized during the testing will be in conformance with the laboratory QA/QC manual. Leachate samples will also be analyzed for biological oxygen demand (BOD), chemical oxygen demand (COD), phosphate, nitrate, sulfate, and pH. In addition, practical quantitation limits (PQLs) for each of the constituents will be determined in accordance with the equipment that is used in the laboratory testing.

4 CONCLUSION

This report, included as part of the Design Hydrogeologic Report for the proposed Wayne County Subtitle D Landfill Phase 3, completes the requirements as described in rule 15A NCAC 13B.1623 (b)(3). The ground and surface water monitoring plan is designed to be effective in the early detection of any possible release of hazardous constituents or the leachate surface impoundment to the uppermost aquifer.

Respectfully submitted,

MUNICIPAL ENGINEERING SERVICES COMPANY, P.A.

Madeline German

Geoscientist

NORTH CAROLINA LICENSED SEAL 1776 GEOLOGIST SEAN K PATRICK

Sean K. Patrick, P.G.

Project Hydrogeologist

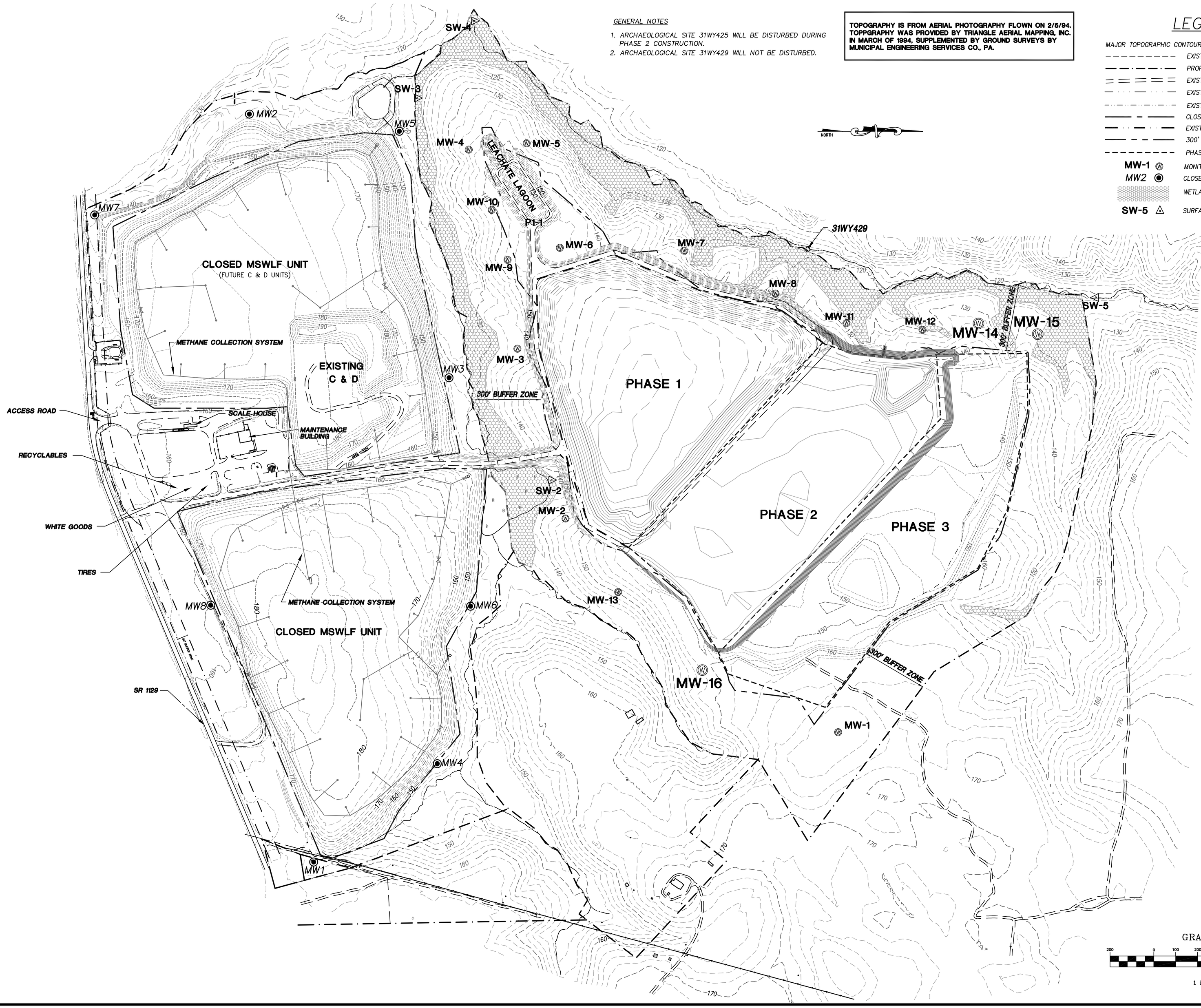
Table E-1: Summary of Ground and Surface Water Monitoring Points

Sampling Point	Type	Gradient	Total Depth (ft)	Designation
MW-14	Monitoring Well	Down	21	Phase 3 Monitoring Well
MW-15	Monitoring Well	Down	16	Phase 3 Monitoring Well
MW-16	Monitoring Well	Up	20	Background/Review Well

GENERAL NOTES

1. ARCHAEOLOGICAL SITE 31WY425 WILL BE DISTURBED DURING PHASE 2 CONSTRUCTION.
2. ARCHAEOLOGICAL SITE 31WY429 WILL NOT BE DISTURBED.

TOPOGRAPHY IS FROM AERIAL PHOTOGRAPHY FLOWN ON 2/5/94. TOPPGRAPHY WAS PROVIDED BY TRIANGLE AERIAL MAPPING, INC. IN MARCH OF 1994, SUPPLEMENTED BY GROUND SURVEYS BY MUNICIPAL ENGINEERING SERVICES CO., PA.



LEGEND

MAJOR TOPOGRAPHIC CONTOUR INTERVAL: 10 FEET

- EXISTING CONTOURS
- PROPERTY LINE
- EXISTING UNPAVED ROAD
- EXISTING CREEK, STREAM, ETC.
- EXISTING DIVERSION DITCHES
- CLOSED MSWLF SANITARY UNIT
- EXISTING MSWLF SANITARY UNIT
- 300' BUFFER ZONE
- PHASE LIMITS
- MW-1 MONITORING WELLS
- MW2 CLOSED MONITORING WELLS
- WETLANDS
- SW-5 SURFACE WATER

NOTE: PROPOSED MONITORING WELLS WILL BE CONVERTED FROM EXISTING PIEZOMETERS

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

Municipal Engineering Services Company, P.A.

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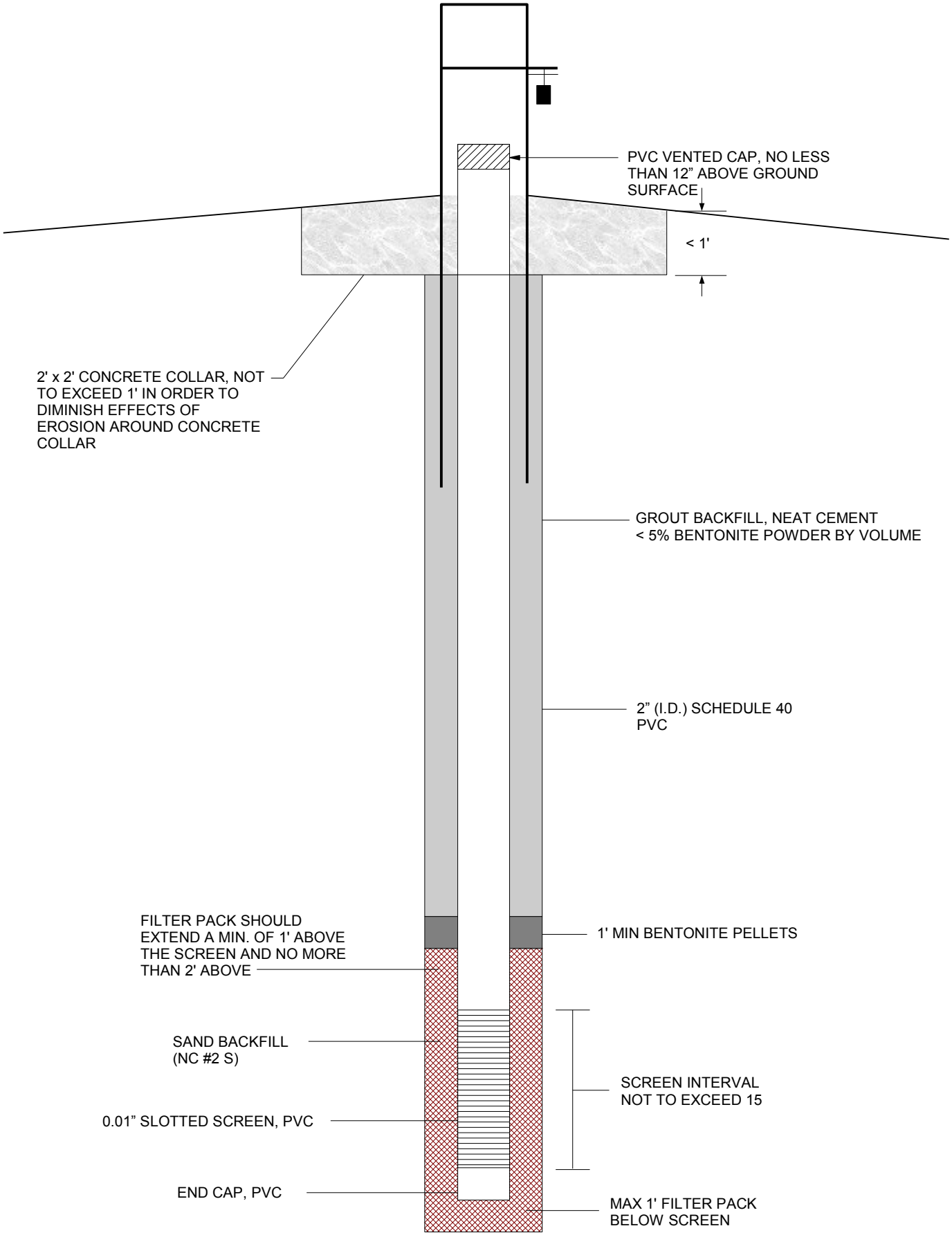
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 828 MOREHEAD CITY, N.C. 28557 (252) 726-9481

MUNICIPAL SOLID WASTE LANDFILL FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

PROPOSED MONITORING WELL LOCATIONS

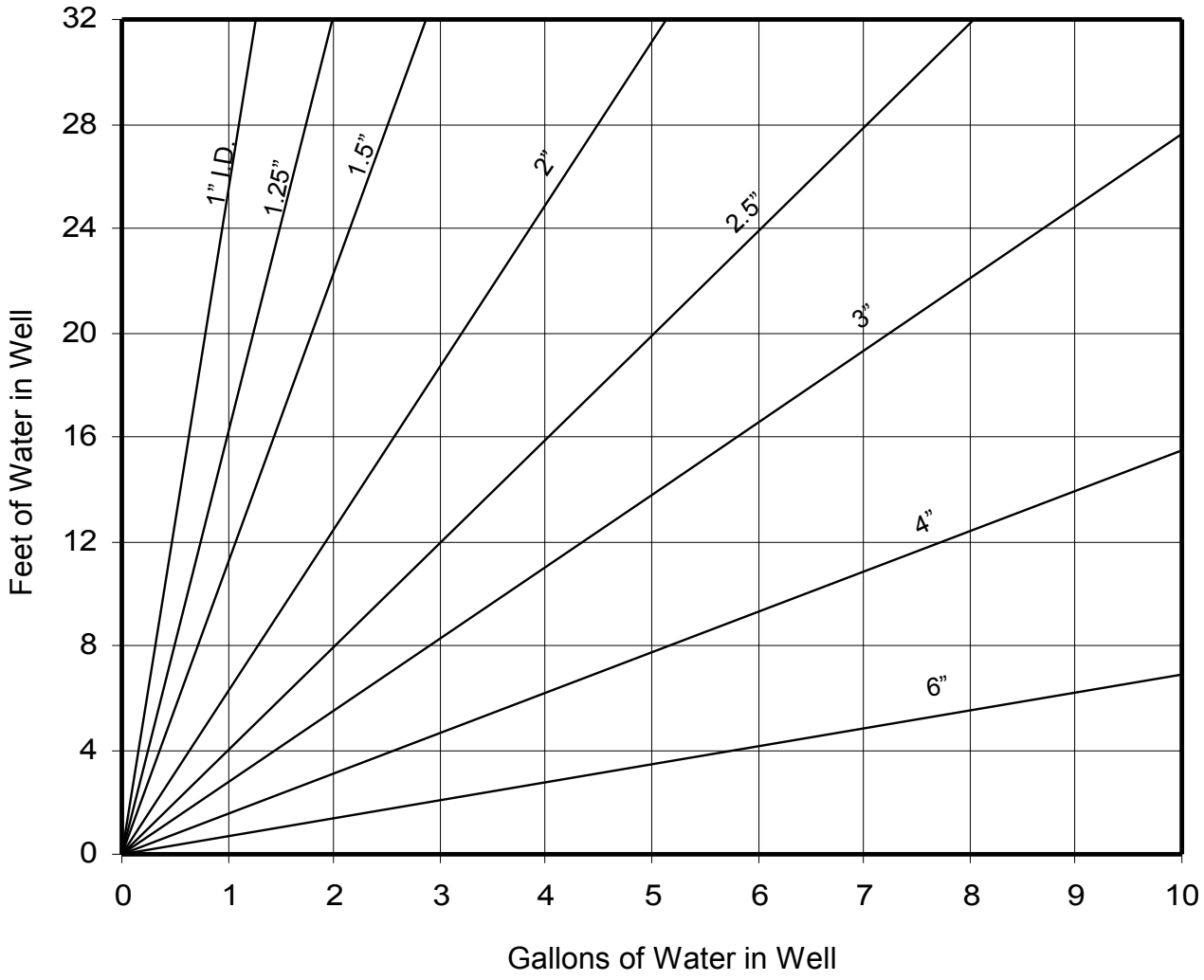
SCALE:	1" = 200'
DATE:	7/15/2008
DRWN. BY:	M. GERMAN
CHKD. BY:	S. PATRICK
PROJECT NUMBER	G06096.6
DRAWING NO.	PLATE A
SHEET NO.	1 OF 1



NOTE: SHALLOW WELLS REQUIRE A MINIMUM OF 5' COMBINED THICKNESS OF GROUT AND BENTONITE.

TYPICAL MONITORING WELL

PLATE B



GRAPHICAL PLOT OF STANDING VOLUMES OF WATER

PLATE C

APPENDIX F

LOG OF BORING NO. 1

PROJECT : Wayne County Lined Landfill
Dudley, North Carolina

JOB NO.: 95181.02

TYPE : HSA, SS

LOCATION : see Plan

SURF. EL: 169.8 ft

DEPTH (FT)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	COHESION LB / SQ FT: PENETRO-METER	COHESION LB / SQ FT: UNCONFINED COMPRESSION	REMARKS
			SAND (SP); Tan, moist, medium dense, with silt, fine	17							
5			CLAYEY SAND (SC); Tan faintly mottled, wet, dense, with silt, fine	44			40	27			
			SAND (SP); Tan, moist, medium dense, trace silt, fine	26							
10			SILTY SAND (SM); Light gray, moist, medium dense, with clay, fine								
15				21							
			- grades saturated								
20			- grades very loose	2							
			End of Boring								
25											
30											
35											
40											

COMPLETION DEPTH: 22.0 ft **DEPTH TO WATER IN BORING:** 17 ft WD, 17 ft 24 hrs AD

DATE: 1-10-96

GAI CONSULTANTS

PLATE A-3

LOG OF BORING NO. 2

PROJECT : Wayne County Lined Landfill
Dudley, North Carolina

JOB NO.: 95181.02

TYPE : HSA, SS

LOCATION : see Plan

SURF. EL: 167.1 ft

DEPTH (FT)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	COHESION LB / SQ FT: PENETRO-METER	COHESION LB / SQ FT: UNCONFINED COMPRESSION	REMARKS
			SAND (SP); Tan, wet, loose, with silt, fine	10							
5			CLAYEY SAND (SC); Tan mottled red, moist, dense, fine	42							
10			SILTY SAND (SM); White and orange, moist, very dense, trace clay, fine	51							
15			SANDY CLAY (CL); Gray, moist, very stiff, fine, some silt - grades gray	26							
20			SILTY SAND (SM); Gray, saturated, loose, fine - grades saturated	6							
25			- grades medium dense	25							
30			End of Boring								
35											
40											

COMPLETION DEPTH: 28.0 ft **DEPTH TO WATER IN BORING:** 16.1 ft 7 days AD

DATE: 12-27-95

GAI CONSULTANTS

PLATE A-4

LOG OF BORING NO. 5

PROJECT : Wayne County Lined Landfill
Dudley, North Carolina

JOB NO.: 95181.02

TYPE : HSA, SS, ST

LOCATION : see Plan

SURF. EL: 156.3 ft

DEPTH (FT)	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	COHESION LB / SQ FT: PENETRO-METER	COHESION LB / SQ FT: UNCONFINED COMPRESSION	REMARKS
			SILTY SAND (SM); Tan, moist, loose, fine	7							
5			- grades orange, wet, medium dense, with clay	21							
10			SANDY CLAY (CL); Gray mottled orange and red, moist, very stiff, fine, with silt	29	92	30					
15			SILTY SAND (SM); Tan and white, saturated, medium dense, fine	18							
20			End of Boring								
25											
30											
35											
40											

COMPLETION DEPTH: 19.0 ft **DEPTH TO WATER IN BORING:** 11 ft WD; 13.1 ft 24 hrs AD

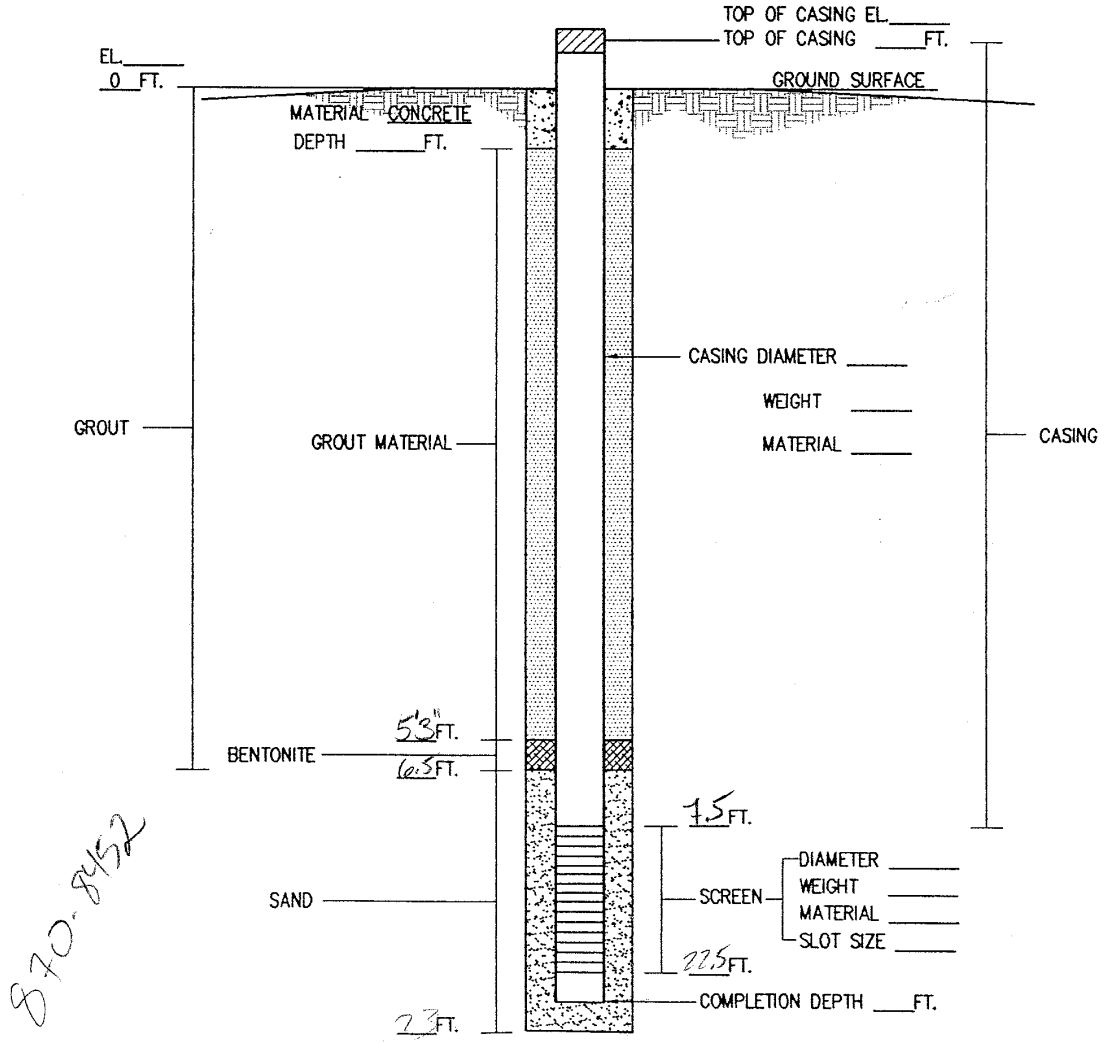
DATE: 1-11-96

GAI CONSULTANTS

PLATE A-7

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-1
4. TOWN Goldsboro
5. COUNTY Wayne
6. OWNER WCDOS
7. LOCATED ON PLATE _____
8. BORING NUMBER MW-1
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-5-97
11. TOTAL DEPTH 23'
12. FORMATION DESCRIPTION BORING LOG NUMBER _____



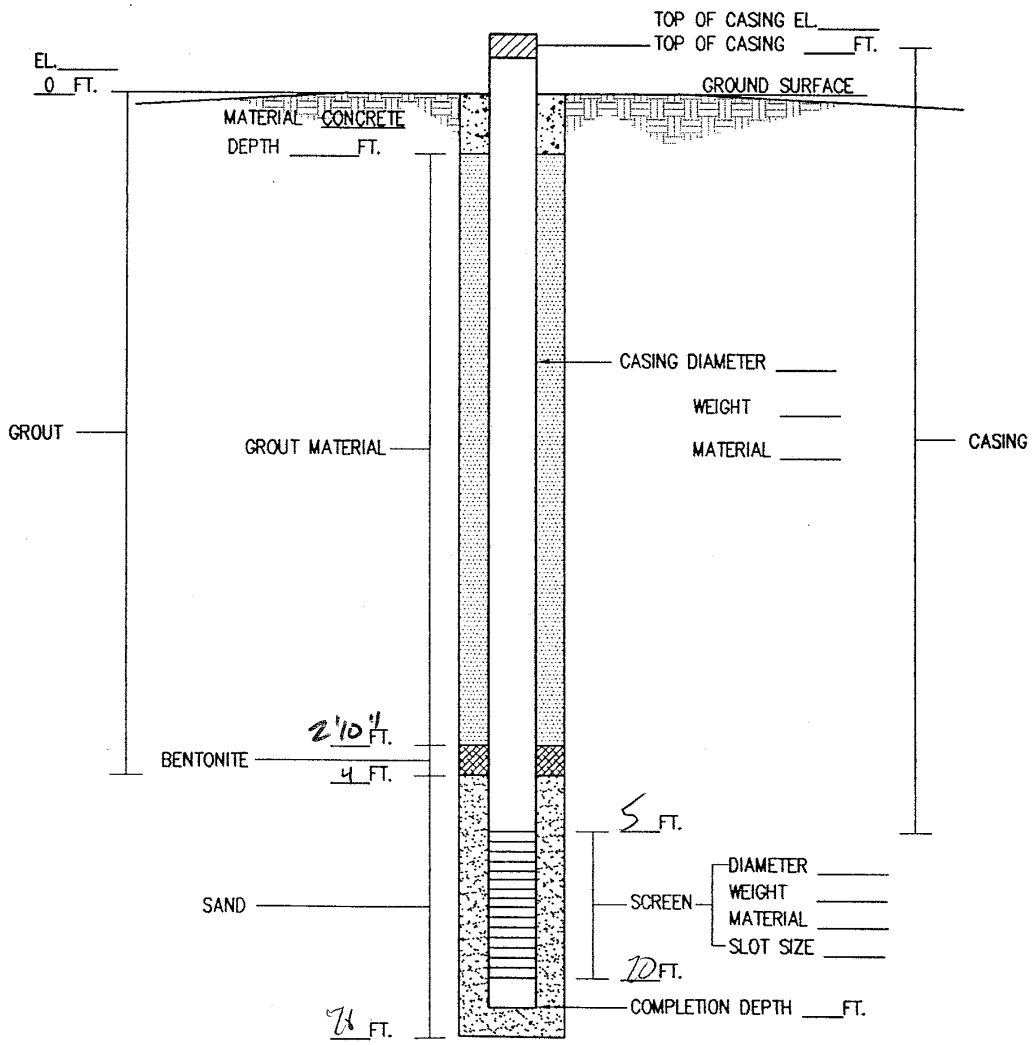
870-8452

I do hereby acknowledge that this record is true to the best of my knowledge _____. _____

Signature of Contractor or Agent Date

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted] _____
3. PIEZOMETER NUMBER _____
4. TOWN _____
5. COUNTY _____
6. OWNER _____
7. LOCATED ON PLATE MW-2
8. BORING NUMBER MW-2
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-5-97
11. TOTAL DEPTH 20'
12. FORMATION DESCRIPTION BORING LOG NUMBER _____

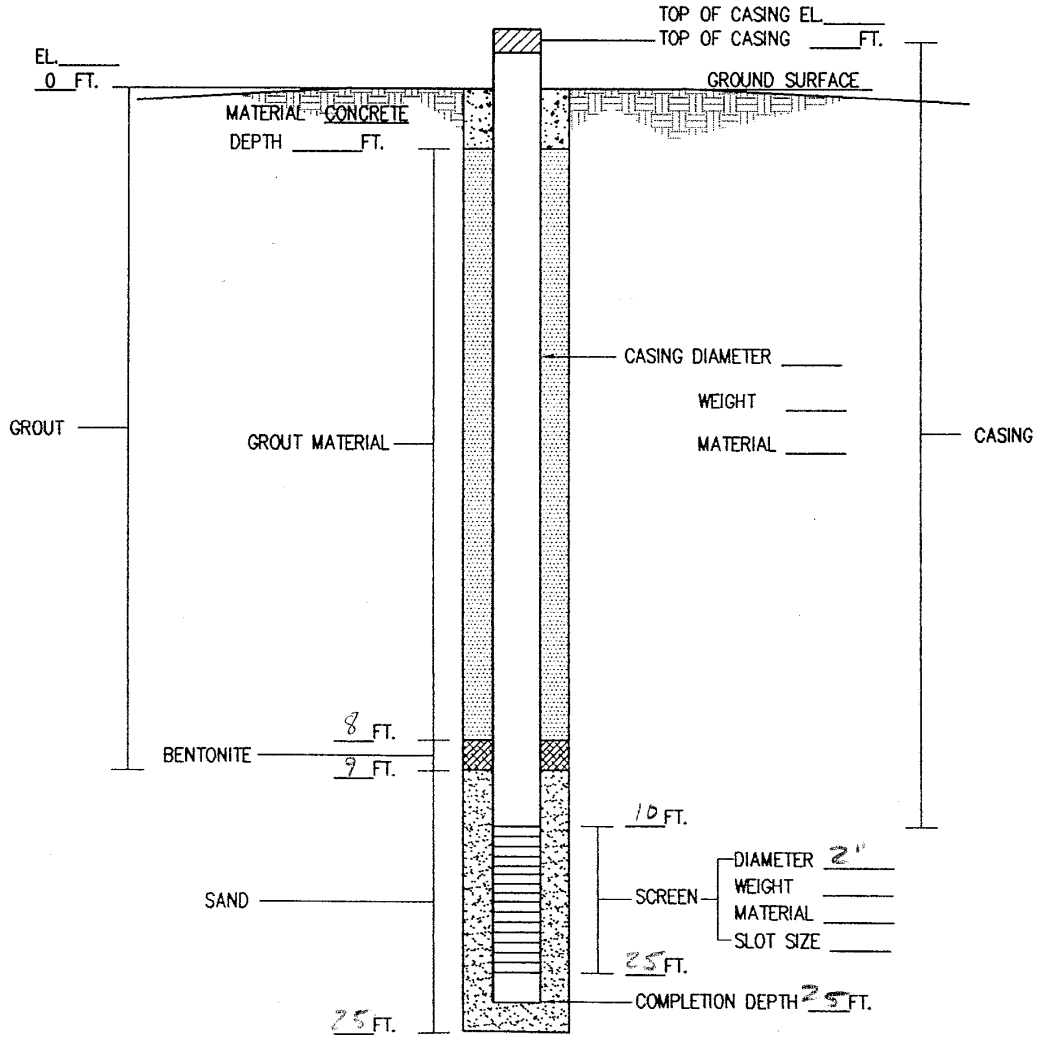


I do hereby acknowledge that this record is true to the best of my knowledge _____ _____

Signature of Contractor or Agent Date

PIEZOMETER CONSTRUCTION RECORD

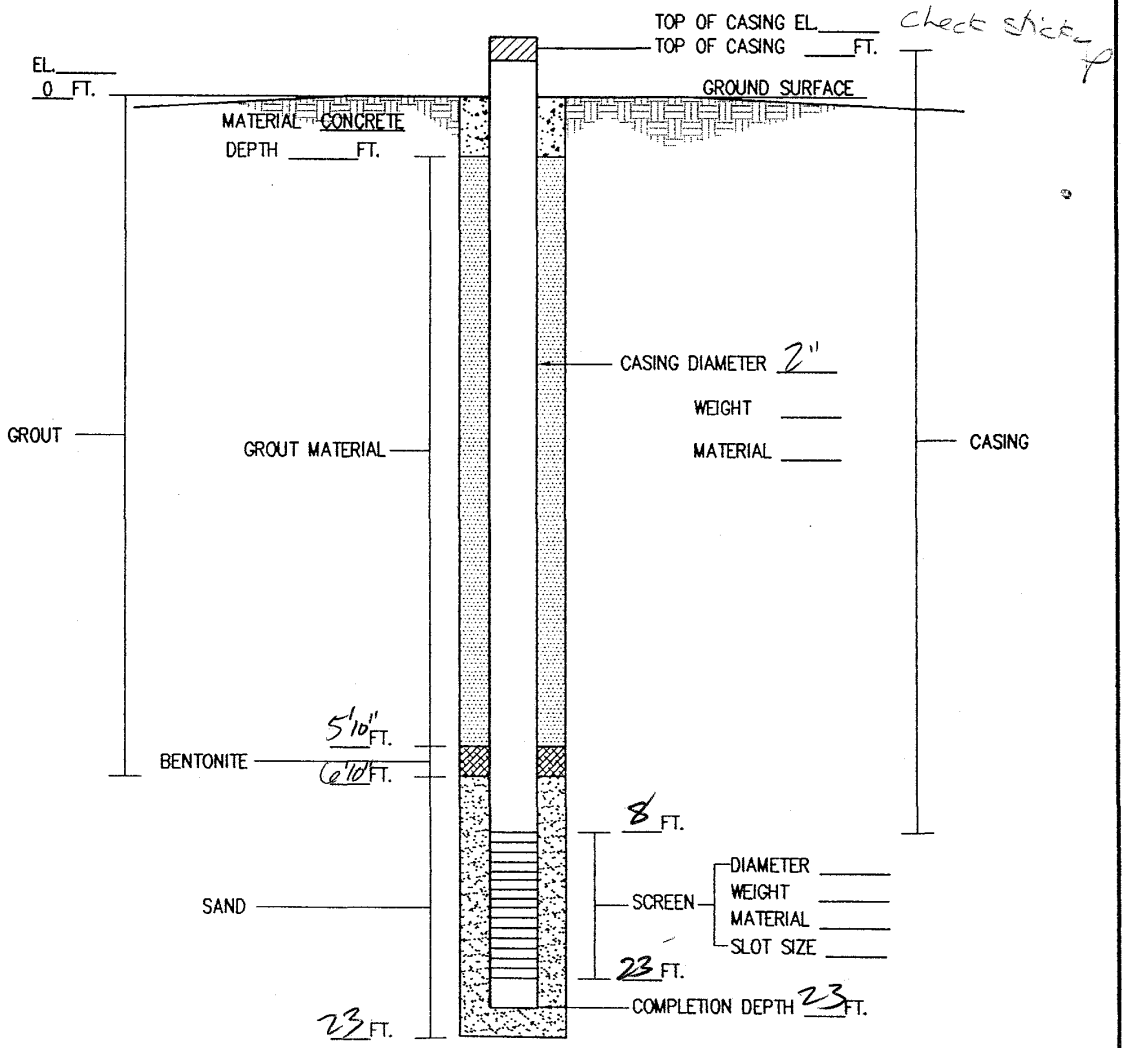
1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-4
4. TOWN Goldsboro
5. COUNTY Wayne
6. OWNER Wayne County
7. LOCATED ON PLATE MW-4
8. BORING NUMBER MW-4
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-3-97
11. TOTAL DEPTH 25'
12. FORMATION DESCRIPTION BORING LOG NUMBER _____



I do hereby acknowledge that this record is true to the best of my knowledge _____, _____
Signature of Contractor or Agent Date

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-5
4. TOWN Goldsboro
5. COUNTY Wayne
6. OWNER Wayne County
7. LOCATED ON PLATE _____
8. BORING NUMBER MW-5
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-3-97
11. TOTAL DEPTH _____
12. FORMATION DESCRIPTION BORING LOG NUMBER _____

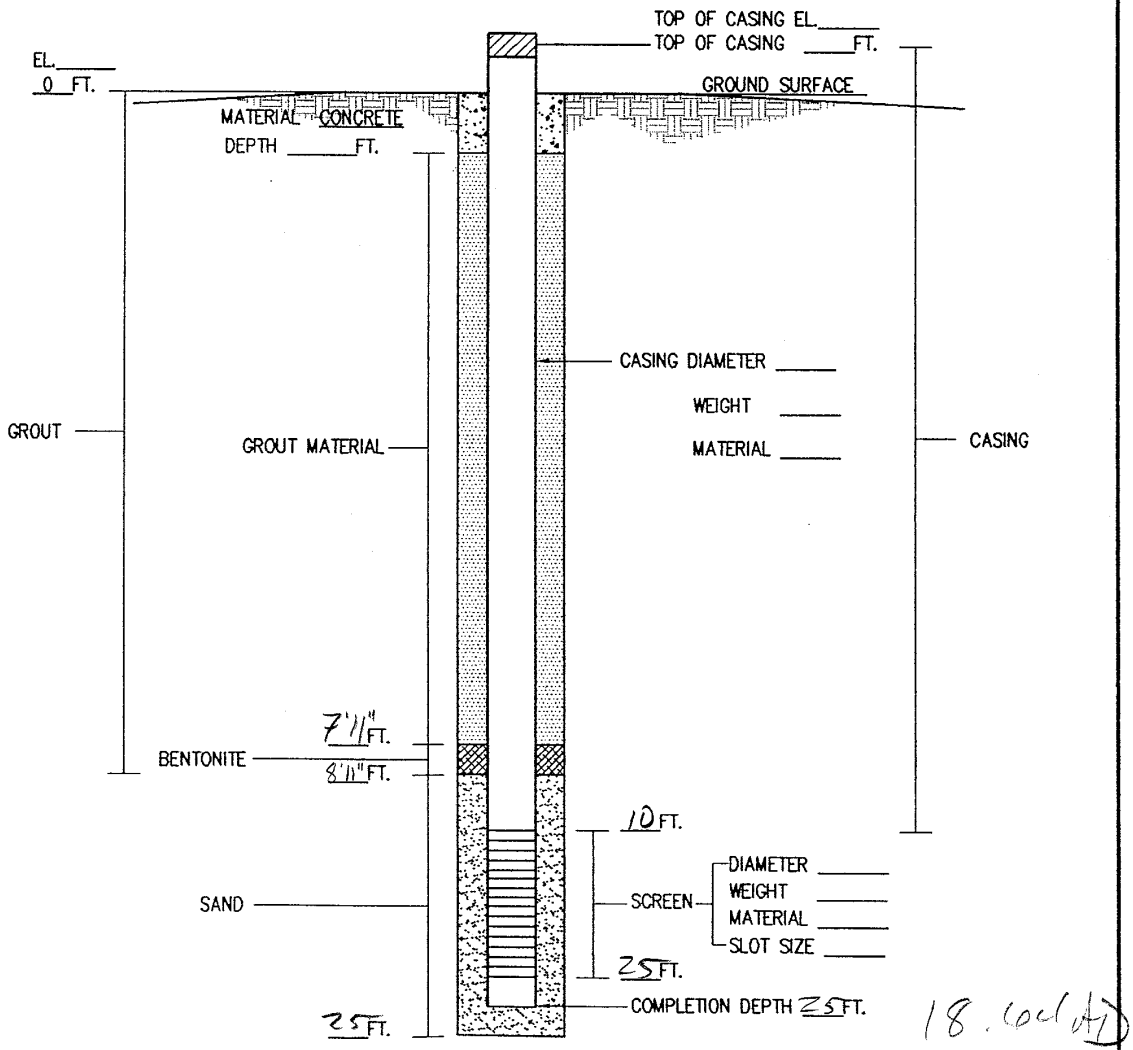


I do hereby acknowledge that this record is true to the best of my knowledge _____, _____

Signature of Contractor or Agent Date

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-10
4. TOWN Goldsboro
5. COUNTY Wayne
6. OWNER WC
7. LOCATED ON PLATE –
8. BORING NUMBER MW-6
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-3-97
11. TOTAL DEPTH 25
12. FORMATION DESCRIPTION BORING LOG NUMBER MW-6

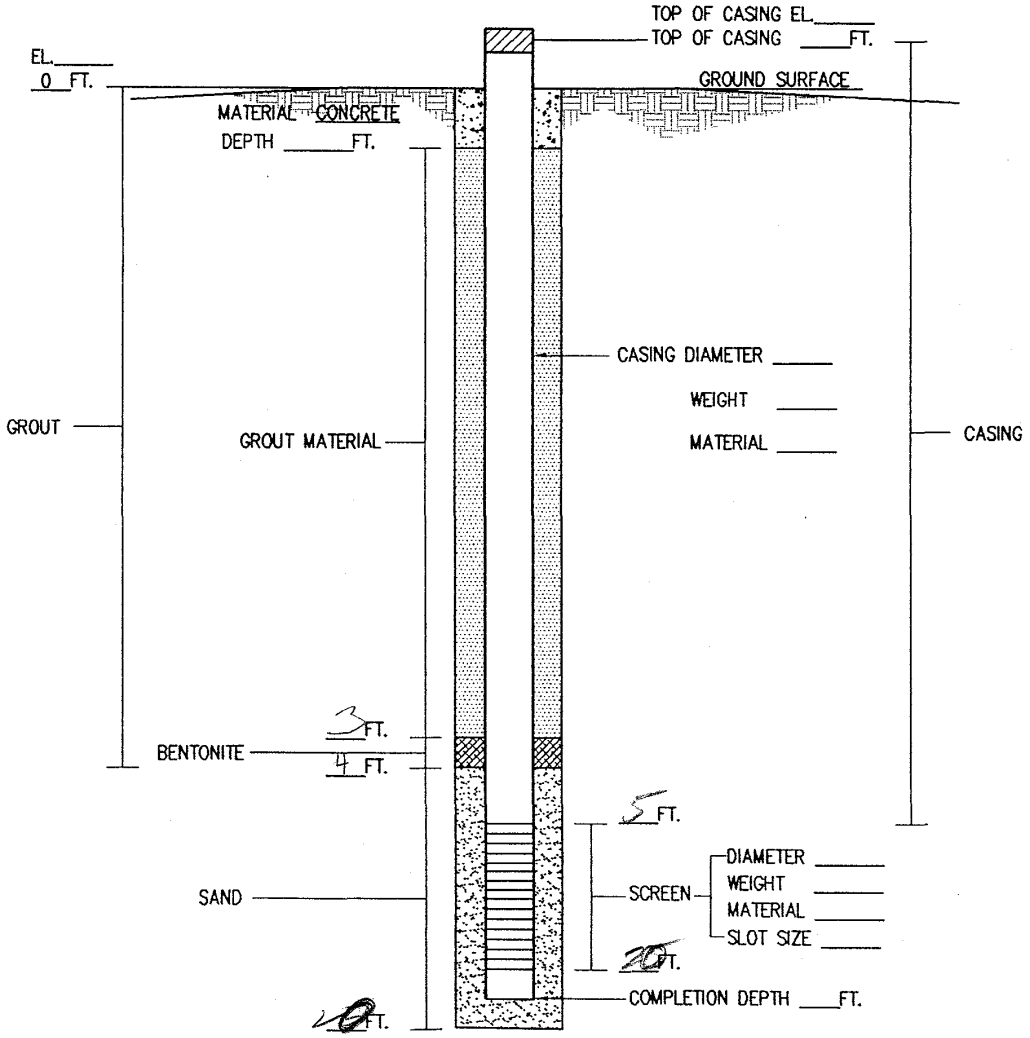


I do hereby acknowledge that this record is true to the best of my knowledge _____.

Signature of Contractor or Agent _____ Date

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-7
4. TOWN _____
5. COUNTY _____
6. OWNER _____
7. LOCATED ON PLATE _____
8. BORING NUMBER _____
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-4-97
11. TOTAL DEPTH 20'
12. FORMATION DESCRIPTION BORING LOG NUMBER _____

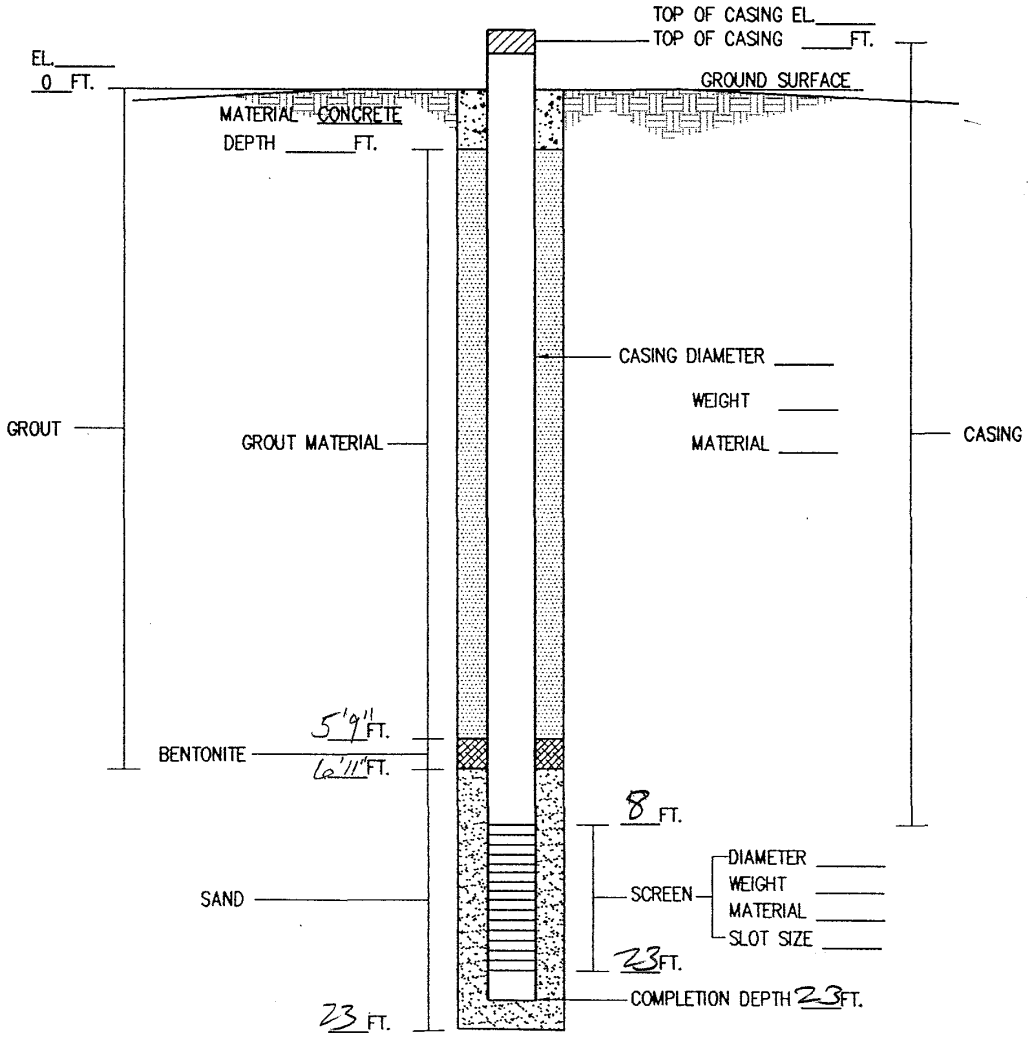


I do hereby acknowledge that this record is true to the best of my knowledge _____. _____

Signature of Contractor or Agent Date

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-9
4. TOWN _____
5. COUNTY Antrim
6. OWNER _____
7. LOCATED ON PLATE _____
8. BORING NUMBER MW-9
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-4-97
11. TOTAL DEPTH 23
12. FORMATION DESCRIPTION BORING LOG NUMBER _____

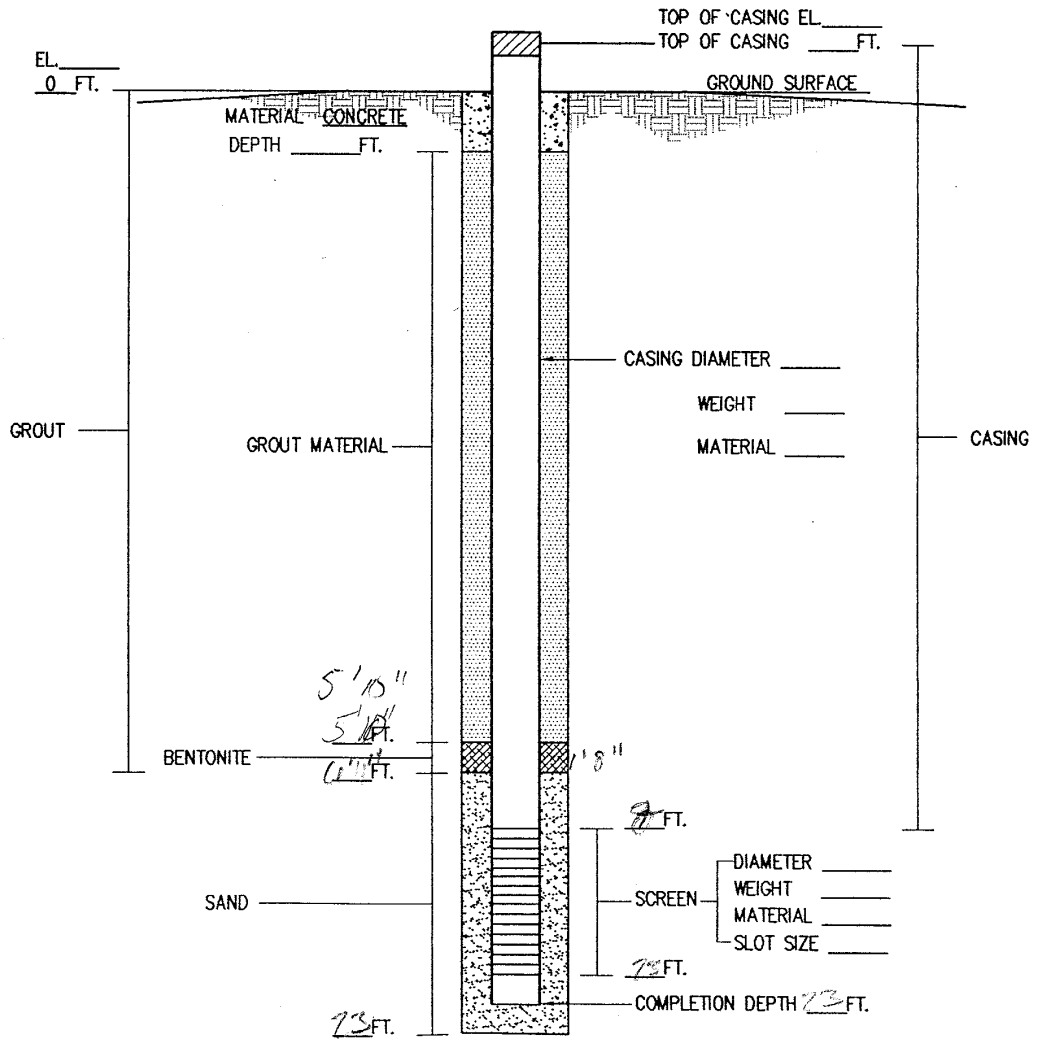


I do hereby acknowledge that this record is true to the best of my knowledge _____. _____

Signature of Contractor or Agent Date

PIEZOMETER CONSTRUCTION RECORD

1. DRILLING CONTRACTOR _____
2. REGISTRATION NUMBER [redacted]
3. PIEZOMETER NUMBER MW-10
4. TOWN Goldsboro
5. COUNTY Wayne
6. OWNER _____
7. LOCATED ON PLATE _____
8. BORING NUMBER MW-10
9. STATIC WATER LEVEL BELOW TOP OF CASING _____
10. DATE DRILLED 12-4-94
11. TOTAL DEPTH _____
12. FORMATION DESCRIPTION BORING LOG NUMBER _____



I do hereby acknowledge that this record is true to the best of my knowledge _____, _____
Signature of Contractor or Agent Date

MW-11

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Jonathan Pfohl CERTIFICATION # 3301

WELL CONTRACTOR COMPANY NAME Antler Environmental PHONE # (919) 878-1259

STATE WELL CONSTRUCTION PERMIT# _____ (if applicable) ASSOCIATED WQ PERMIT# _____ (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: Dudley County Wayne
460B South Landfill Rd. Dudley NC 28333
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☒Flat
(check appropriate box)
Latitude/longitude of well location
35-17-53.34 / 78-04-22.44
(degrees/minutes/seconds)
Latitude/longitude source: ☒GPS ☐Topographic map
(check box)

3. OWNER: Wayne Co. Landfill
Address 460B South Landfill Rd.
(Street or Route No.)
Dudley NC 28333
City/or Town State Zip Code
(919)-689-2994
Area code- Phone number

4. DATE DRILLED 4/15/04
5. TOTAL DEPTH: 15.49
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 5' BTOP FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST —
10. WATER ZONES (depth): _____

DEPTH From	To	DRILLING LOG Formation Description
0	1	Silty Sand
1	16	Clayey Sand

11. DISINFECTION: Type N/A Amount _____
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From +3	To 5.49	Ft.	2	sch 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 2	Ft.	Quikrete	Pour
From 2	To 4.8	Ft.	3/8" Bentonite Chips	Pour

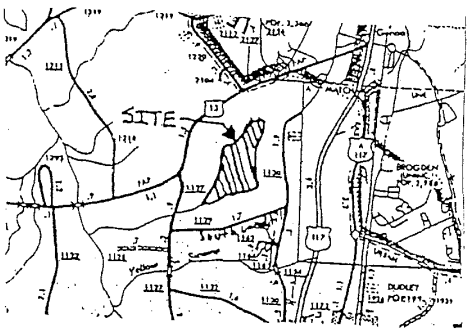
14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 5.49	To 15.49	Ft.	2	in.	0.10	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 4.5	To 16	Ft.	#2	Filter Sand "DSI"
From	To	Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.



16. REMARKS: Monitoring well for MSWLF Phase 2 MW-11

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Jonathan Pfohl 4/20/04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

MW-12

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Jonathan Pfohl CERTIFICATION # 3301

WELL CONTRACTOR COMPANY NAME Antler Environmental PHONE # (919) 878-1259

STATE WELL CONSTRUCTION PERMIT# _____ (if applicable) ASSOCIATED WQ PERMIT# _____ (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: Dudley County Wayne
460B South Landfill Rd. Dudley NC 28333
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☒Flat
(check appropriate box)
Latitude/longitude of well location
35-17-56.785 / 78-04-22.04
(degrees/minutes/seconds)
Latitude/longitude source: ☒GPS ☐Topographic map
(check box)

3. OWNER: Wayne Co. Landfill
Address 460B South Landfill Rd.
(Street or Route No.)
Dudley NC 28333
City or Town State Zip Code
(919)-689-2994
Area code- Phone number

4. DATE DRILLED 4/15/04
5. TOTAL DEPTH: 16.45
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 5.24' BTOP FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST _____
10. WATER ZONES (depth): 5.24 - 16.45

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0	1	Top Soil
1	4	Silty Clay - White
4	9	Silty Sand - Brown
9	15	Silty Sand - Dark Brown
15	17	Clay - Dark Gray

11. DISINFECTION: Type N/A Amount _____
12. CASING:

	Depth From	Depth To	Diameter Ft.	Wall Thickness or Weight/Ft.	Material
	+3	6.45	2	sch 40	PVC

13. GROUT:

	Depth From	Depth To	Material	Method
	0	3	Quikrete	Pour
	3	5.5	3/8" Bentonite Chips	Pour

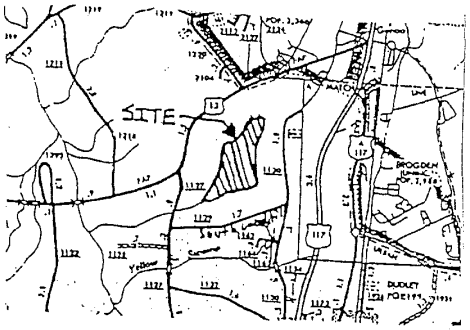
14. SCREEN:

	Depth From	Depth To	Diameter Ft.	Slot Size	Material
	6.45	16.45	2 in.	0.10 in.	PVC
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size Ft.	Material
	5.5	17	#2	Filter Sand "DSI"

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.



16. REMARKS: Monitoring well for MSWLF Phase 2 MW-12

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Jonathan Pfohl 4/20/04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days. GW-1 REV. 07/2001

MW-13

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Jonathan Pfohl CERTIFICATION # 3301

WELL CONTRACTOR COMPANY NAME Antler Environmental PHONE # (919) 878-1259

STATE WELL CONSTRUCTION PERMIT# _____ (if applicable) ASSOCIATED WQ PERMIT# _____ (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: Dudley County Wayne
460B South Landfill Rd. Dudley NC 28333
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☒Flat
(check appropriate box)
Latitude/longitude of well location
35-17-42.92 / 78-04-07.6968
(degrees/minutes/seconds)
Latitude/longitude source: ☒GPS ☐Topographic map
(check box)

3. OWNER: Wayne Co. Landfill
Address 460B South Landfill Rd.
(Street or Route No.)
Dudley NC 28333
City or Town State Zip Code
(919)-689-2994
Area code- Phone number

4. DATE DRILLED 4/15/04
5. TOTAL DEPTH: 15.85
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: _____ FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST _____
10. WATER ZONES (depth): 8.0' - 16'

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0	2	Silty Sand
2	8	Silty Clay
8	16	Silty Sand

11. DISINFECTION: Type N/A Amount _____
12. CASING:

	Depth From	Depth To	Diameter Ft.	Wall Thickness or Weight/Ft.	Material
	+3	5.85	2	Sch 40	PVC

13. GROUT:

	Depth From	Depth To	Material Ft.	Method
	0	3	Quikrete	Pour
	3	5	3/8" Bentonite Chips	Pour

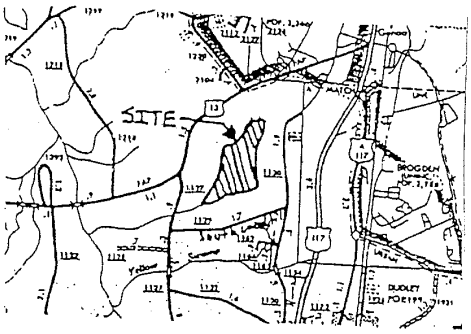
14. SCREEN:

	Depth From	Depth To	Diameter Ft.	Slot Size in.	Material
	5.85	15.85	2 in.	0.10 in.	PVC
			in.	in.	

15. SAND/GRAVEL PACK:

	Depth From	Depth To	Size Ft.	Material
	5	16	#2	Filter Sand "DSI"

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.



16. REMARKS: Monitoring well for MSWLF Phase 2 MW-13

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Jonathan Pfohl 4/20/04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001