NYE County NWRPO -Technical Data Report

RID No.	Transmitter	Org.	Receiver	Org.	Key word1	Title/Description
7409	Gilmore	NWRPO	QARC	Nye	22PB	NC-EWDP-22PB Alluvium and Non-Alluvium Logging Forms

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Doc. Date 10/29/2007 **General Doc. Type** QA Program Doc **Keyword2** cuttings

Entry Date 1/30/2008 **Detailed Doc. Type** Alluvium/Non-Alluvium Logging **Keyword3** geology

Data Originator Preparer Kathy Gilmore

Title of Data NC-EWDP-22PB Alluvium and Non-Alluvium Logging Forms

Description of Data Drill cuttings logging reports exported from drilling database (NC Drilling v3.6.mdb) in .pdf format (Alluvium Logging Form and Non-Alluvium Drill Cuttings Logging Form from 2/21/02 to 2/27/02).

Data Collection Method Samples collected during reverse circulation drilling of 22PB. Borehole drilling and sampling, and borehole depth control procedures. Logs were reviewed for accuracy of field data.

Data Location(s) NC-EWDP-22PB

Data Collection Period(s) 2/21/02 to 2/27/02

Data Source(s) Visual field description per TP-8.0, Revision 3, 9/25/01. Drill cuttings samples and Nye County NWRPO laboratory data that includes grain size distribution (sieve data) and hydrometer data (silt/clay measurement).

Supporting Data: RIDs 5102, 5133, 5531, 6756.

Data Censoring Samples from 0-22.5 ft. were collected during drilling of pilot hole to set 10 3/4" conductor casing using conventional air circulation. Samples were discharged to surface and collected in pans. Samples were likely contaminated and not representative of in-situ material. Particle Size Distribution data and USCS Group Name on the Alluvium Logging Form. Water Production data for interval 520 to 1200 ft.; data recalculated in RID 5531.

Data Processing Data from field logging forms were entered into the drilling database, reviewed, and transmitted to the QARC.

Data Limitations The Alluvium Logging Form includes grain size distribution based on field estimates. The estimates are made on every 2.5 ft. sample interval (in the saturated zone) and used for preliminary layering information, general planning of wells and screen intervals prior to receipt of laboratory data and to fill the data gaps between laboratory samples. These field estimates of grain size distribution should not be considered representative of the geologic samples. Therefore, Particle Size Distribution data and USCS Group Name have been censored. .

Four boreholes were drilled at site 22 in Phase III. The borehole NC-EWDP-22SA was drilled using a 5 3/8" tricone bit and NC-EWDP-22PB was drilled using an 8 1/2" tricone bit. Both boreholes were drilled employing reverse circulation (dual wall) air drilling methods. A comparison of the alluvial grain size distribution (laboratory data) between NC-EWDP-22PB and NC-EWDP-22SA indicates a number of differences. In all cases, grain size distribution data from NC-EWDP-22SA is considered more representative of in-situ conditions than data from NC-EWDP-22PB. These differences and associated limitations in NC-EWDP-22PB data are as follows:

1) Differences in the capacity of the smaller drill string versus the larger drill string to lift cuttings to surface during advancement of the bit.

2) Dry samples from the unsaturated zone were homogenized by mixing the cuttings on a tarpaulin using the corner rolling method. After mixing is performed, a logging subsample was extracted for description and the cuttings were split for laboratory analysis and archival. If perfect homogenization is not achieved in the field sample bias is introduced. This problem in compounded at the NWRPO laboratory where the sample is once again split for testing.

3) Wind/air winnowing of fines in the unsaturated zone during dry drilling at the air cyclone collector causing a relative decrease in fines.

4) During processing of saturated samples after drying, some samples were not entirely dry and, consequently, a sample bias was introduced. The bias toward coarse fraction occurs while subsampling.

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In addition, minor disturbance may have been introduced into samples by: 1) gravel accumulating on the rotating splitter during wet drilling; 2) unsaturated zone sample homogenization process and sample splitting; 3) loss of fines during pumping and siphoning of clear water from wet bucket samples; and 4) a very minor introduction of wind-blown fines during sample drying.
In summary, the grain size distribution for samples obtained from borehole NC-EWDP-22PB has several limitations. The fines fraction (silt and clay) is generally under-represented in the unsaturated zone due to winnowing by return air circulation and wind at the cyclone. The fines fraction in the saturated zone is also under-represented due to lack of adequate drying of samples for representative subsample processing.

Governing QA Docs. TP-8.0, Field Logging and Handling of Borehole Samples, Revision 3, 09/25/01, Section 5.5

Frequency of Transmittal once per borehole

Direct Questions About Data To- NWRPO QA Records Center