# Technical Data Information Report

| RID Number | Transmitter | Transmitter Organization | Receiver | Receiver Organization | Keyword 1 |
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| 8100.00 | Klenke | Nye County NWRPO | QARC | Nye County NWRPO | EWDP |

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**Document Title/Subject**
EWDP Manual Water Level Measurements from January 1, 2012 through December 31, 2012.

**Data Originator/Preparer**
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**Data Description**
EWDP Manual Water Level Measurements from January 1, 2012 through December 31, 2012. Data package includes Nye County's Regional Groundwater Elevation Database (RGED V. 6.0_012314.accdb containing Early Warning Drilling Program (EWDP) manual water level measurements, from January 1, 2012 through December 31, 2012, field forms, hydrographs (available on request) and exported data from database - posted to nyecounty.com website as "rid8100.xlsx".

**Data Collection Method**
NWRPO calibrated electric water level sounders in accordance with, Technical Procedure TP-9.9 Revision 4, Measurement of Groundwater Levels Using Electric Well Sounders dated 8/6/09.

**Data Collection Location**
EWDP Wells: 1DX Shallow,1DX Deep, 2DB recompleted 7/08, 3D, 4PA, 4PB, 5SB, 7S, 12PA, 12PB, 12PC, 13P, 15P, 16P, 19P, 24P, 24PB, 27P, 28P, 29P, 32P Shallow, 32P Intermediate, 32P deep, 33P Shallow, 33P Intermediate, 33P Deep, Washburn Deep, 10P Deep, 10P Shallow, 18P, 22PA Deep, 22PA Shallow, 22PB Deep, 22PB Shallow, 22PC Deep, 22PC Shallow, 22S-Z2, and 22PA Shallow. Note: all EWDP well surveys were performed by the YMP Site Facilities Department /Field Engineering, Survey Section, with all elevations reported in NGVD-29. Therefore all EWDP water levels in this submittal and all previous EWDP Water Data Submittals (RID 6360, 6631, 7044, 7122, 7618, and 7904) have been reported in NGVD-29.

**Data Collection Period**
1/1/2012 – 12/31/2012

**Data Sources**
1) Department of Energy (DOE) Management and Operating Contractor (M&O) derived latitude and longitude for well location and elevation data for well pad elevation; 2) Depth to groundwater measured with electric water level sounders as recorded either in the Scientific Notebook (SNB) dedicated to each well, EWDP Groundwater Level SNB #144 (RID 6257.01), EWDP Westbay Instrumented Wells SNB #177 (RID 8144, Site 22 Tracer Test SNBs #166 (RID 7322.01) and #181 (RID 7322.03), and/or on the NWRPO Water Level Measurement Field Form (Form TP-9.9-1 Rev 1 dated 7/21/09 ; 3) NWRPO approved Well Completion Diagrams for each EWDP well for casing type, diameter, and measuring point stickup (as established with engineers steel tape and recorded in Scientific Notebook).

Supporting Data: Metadata for prior submittals of manual water level measurements in EWDP wells (RIDs, 6360, 6631, 7044, 7122, 7618, 7904, and 8099).

**Data Censoring**
Data from well 1DX deep was censored after 5/14/12. The cement slurry seal between the deep and shallow string failed sometime between 5/14/12 and 7/16/12 (13 years after completion) allowing higher pressure shallow zone aquifer waters from 1Dx Shallow to leak down the wellbore and raise water levels in the deep zone. Water levels in the deep zone are approaching water levels in the shallow zone (11/14/12) as cross communication between the two zones continues. For more information see: RID 3828 – Well Completion, 1303 - Daily Operations Report, 3740 – Drillers Daily Report, and 1212 / 3073 / 4117 –

Geophysics.

**Data Processing**

Routinely, data processing consists of calculations made in the Microsoft Access database (RGED v.6.0_012314accdb) and exports made from the database to Microsoft Excel. Additionally, data are evaluated through the use of hydrographs to determine whether anomalous data exist. Anomalous data are investigated (through scientific notebooks, earthquake records, etc.) to determine the source of the anomaly. If the anomaly cannot be explained, the data are censored.

**Data Limitations**

The water level elevations presented must be considered approximate because of the potential error in the GPS-based elevation of the land surface at the well site which is believed to be on the order of +/- 1.75 ft. according to work performed by the Center for Nuclear Waste Regulatory Analyses. The potential error in the GPS-based elevations does not affect the depth to water nor the absolute change in water levels over time that may be calculated using the elevation datum for land surface. The potential error may, however, result in limitations in the use of these data for the calculation of hydraulic gradients between wells with the error induced in such calculations being inversely proportional to the distance between the two wells being used to perform the calculation.

Water level measurements in well 2DB recompleted 7/08, may not represent water levels of the Paleozoic carbonate aquifer completion as expected. Problems encountered after the completion of the piezometer in the Paleozoic carbonate, primarily clay swelling and/or caving of the open hole completion, likely have isolated the production casing from the aquifer. See RID 7559 for more details.

Water level measurements in well 32P shallow piezometer may be impacted by the presence of polymer-based drilling fluids. These drilling fluids were used in the drilling of the now abandoned USW VA-3 borehole, which was situated approximately 50 feet south of 32P. The borehole was drilled by a Department of Energy contractor, under the Probabilistic Volcanic Hazard Analysis program for the Yucca Mountain project, on magnetic anomaly “g”, with a modified conventional circulation system utilizing Baroid EZ Mud polymer.

Water level measurements in well 33P shallow piezometer may be impacted by the presence of polymer-based drilling fluids. The initial borehole for well NC-EWDP-33P was drilled by Department of Energy contractors as borehole USW VA-5, and used a modified conventional circulation system utilizing Baroid EZ Mud polymer. Details of the completion can be found in RID 7009, “NC-EWDP-33P Field "As-Built” Well Completion and Wellhead Protection Diagrams.” Water levels have been steadily declining in this piezometer since it was developed by airlifting (7/17/07 to 9/20/07), and appear to indicate disequilibrium with the conterminous potentiometric surface.

Water levels in wells 22PA Deep, 22PA Shallow, 22PB Deep, 22PB Shallow, 22PC Deep, 22PC Shallow, and 22S-Z2 may have been affected by the Site 22 Distributed Temperature Perturbation Sensing test where 238889 gallons were pumped from well 22S-Z2 at approximately 42 gpm, from 1/9/12 to 1/13/12.

**Governing QA Docs:** TP-9.9, Rev 4

**Frequency of Transmittal** As necessary

**Direct Questions About Data To:** NWRPO QA Records Center