

# NYE County NWRPO -Technical Data Report

RID No.	Transmitter	Org.	Receiver	Org.	Key word1	Title/Description
6194	Hammermeister	Nye	QARC	Nye	groundwat	Groundwater Chemistry Monitoring, Sampling, and Analysis Annual Report for Fiscal Year 2002, NWRPO-2003-04, December 2003 (includes review documentation)
Doc. Date	12/31/2003	General Doc. Type	QA Program Doc	Keyword2	EWDP	
Entry Date	5/12/2004	Detailed Doc. Type	Annual Report	Keyword3	Engineered	
Data Originator Preparer	Drew Hall And John Walton					
Title of Data	Groundwater Chemistry Monitoring, Sampling, and Analysis Annual Report for Fiscal Year 2002, NWRPO-2003-04, December 2003					
Description of Data	This record includes a hard copy and electronic file of the subject report. It summarizes the following: an analysis and interpretation of trends in EWDP groundwater chemistry data from 1999 through fiscal year 2002; a study that models the effects of physical separation processes on the range in Engineered Barrier System (EBS) groundwater chemistry; a summary of the groundwater chemistry sampling and analysis program for fiscal year 2002; and a QA analysis of the groundwater chemistry data collected from 1998 through 2002.					
Data Collection Method	Table 1-1 of the subject report lists the groundwater sample collection method used by well and by sampling date from 1994 to 2002. Table 1-1 also lists the chemical analyses conducted on each groundwater sample. Industry-standard methods for measurement of field chemistry indicator parameters, sample labeling, filtering, preserving, and shipping are detailed in Quality Assurance (QA) technical procedure TP-8.1 titled "Field Collection and Handling of Water Samples".					
Data Location(s)	Groundwater samples were collected and analyzed from the regions adjacent to Yucca Mountain, between Yucca Mountain and Highway 95 on the northern border of Amargosa Valley, and within Amargosa Valley. Chemical analyses were conducted at certified chemical testing laboratories, and data analyses and interpretations, including modeling, activities were conducted at the University of Texas - El Paso.					
Data Collection Period(s)	1994 - 2002					
Data Source(s)	Nye County staff and contractors collected groundwater samples from wells and measured field chemical parameters. Certified chemical testing laboratories were responsible for chemistry analytical results included directly in this report or used in analyses presented in this report. Data from split groundwater samples supplied to the U.S. Geological Survey by Nye County were obtained from the Department of Energy's Technical Database Management System (TDMS). A description of drilling, lithology, and well completion details for EWDP Phase III wells that were sampled for groundwater can be found in a report titled "Nye County Drilling, Geologic Sampling and Testing, and Well Completion Report for the Early Warning Drilling Program Phase III Boreholes" found in RID 5579. Lithology and well completion information for wells from all three phases can be viewed on the NWRPO website ( <a href="http://www.nyecounty.com">www.nyecounty.com</a> ).					
Data Censoring	Groundwater chemical analytical data recommended for censoring include: lithium and manganese data, data from samples contaminated with drilling fluids and/or grout, pre-purging/pre-development data, first occurrence of water data, and several samples exhibiting field and/or laboratory error as determined by comparing duplicate samples. The data and reasons for censoring are listed in Table 5-6 of the subject report					
Data Processing	Significant data processing was conducted as part of the following analyses: principal components correspondence, enrichment analyses to identify data trends in Section 2; modeling of physical separation processes presented in Section 3; and various QA related analyses in Section 5. Correspondence analysis and principal components analysis methods used in analyzing data trends are described in detail by: Braak, C.J.F., and P. Smilauer. 1998. CANOCO Reference Manual and User's Guide to Canoco for Windows: Software for Canonical Community Ordination (version 4). Ithaca, New York: Microcomputer Power. Enrichment analyses that provide information on the chemical evolution of groundwater are described in the subject report. Modeling methods used to simulate the effects of physical separation processes on water chemistry in the EBS are described in the following reference: Hall, D. and J. Walton. 2003. Physical Separation Processes and EBS Water Chemistry - A Modeling Study. 10th International High Level Radioactive Waste Management Conference. Las Vegas, NV: American Nuclear Society					

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**Data Limitations** First occurrence and predevelopment groundwater sample data are not generally considered representative of in situ conditions. Residual bentonite not recovered during well development and purging prior to sampling may be responsible for altering the groundwater chemistry in borehole 23P. Field equipment rinses were performed using water from Garlic Well (i.e., potable water), rather than the deionized water specified in TP-8.1. As a result, analytical results are inconclusive regarding contamination from the pump/hose system. Toward the end of the August 2002 session field values for DO decayed over the course of a day and many readings for other parameters, including turbidity and ORP, were unstable or inaccurate. The DO decay was likely the result of increasing water temperatures caused by increasing air temperatures and solar radiation on the exposed plastic tubing stored on the delivery hose reel. The unstable readings and inaccurate values for turbidity and ORP were traced to leaking O-rings in the sonde housing. Lubrication of the O-rings corrected the leaks and restored reading stability and accuracy. Sample shipping instructions supplied by Geochron in 2001 proved to be inadequate and resulted in the loss of a significant number of samples. Sample bottles leaked during shipping and in some cases broke open. Data obtained from modeling are dependent on the assumptions used in developing and applying the model(s). Modeling assumptions are listed in the subject report and references contained therein.

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**Governing QA Docs.** TP-8.1, QAP-3.1 and QAP-3.2

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**Frequency of Transmittal** One time only

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**Direct Questions About Data To-** Nye County QA Records Center