NYE COUNTY
DEPARTMENT OF NATURAL RESOURCES & FEDERAL FACILITIES
NUCLEAR WASTE REPOSITORY PROJECT OFFICE
1210 E. Basin Rd. Ste. #6 • Pahrump, Nevada 89048
(702) 727-7727 • Fax (702) 727-7919

DW report

99-011

April 6, 1999

United States Nuclear Regulatory Commission
Neal Coleman
11545 Rockville Pike
Rockville, Maryland, 20852

Transmittal of the Nye County Early Warning Drilling Program (EWDP) Phase I Data Report

Dear Mr. Coleman:

Enclosed please find a copy of the EWDP Phase I Data Report. This Report is a compilation of data obtained during drilling and testing of eight new monitor wells along the I-95 corridor. New insights into the geology and hydrology of the area have been obtained since drilling began on November 30, 1998. This first, of hopefully many data dumps, is available for all who prefer to do their own analysis of the hydrology and geology of the Amargosa Valley, Forty-Mile Wash, and Crater Flat areas. This first report contains all data obtained to date during the drilling phase. Most shallow wells have been completed with a combination of Westbay and/or conventional slotted PVC or steel pieziometers to be used as long-term ground water monitors. Wells such as EWDP-1D, with its accompanying shallow well pair EWDP-1S, will monitor seven different hydrologic zones. Five of these zones are shallow, less than 350 feet with two deep zones (1350 and 2200 feet) which have 2 3/8" tubing strings installed that will be used to monitor the deeper, hotter water zones encountered during drilling operations. Specific head relationships along with accompanying water chemistry samples will be obtained from each zone.

This data report has been organized into well sections separated by tabbed dividers. All information available to date for each well is included. As new data comes available it will be distributed by hard copy and also entered into the Nye County web site at **www.nyecounty.com**, under Early Warning Drilling Program. The web site is currently being redesigned for ease of access and data entry.

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If you have any questions regarding this data package, please contact Nick Stellavato at (775) 727-7727 or Tom Buqo at (702) 875-4594. Thank you for your interest in the EWDP and scientific characterization of Yucca Mountain.

Sincerely,

for Nick Stellavato

Nick Stellavato
On-Site Geotechnical Representative

NS/kam

cc: Nye County Commissioners
Les W. Bradshaw
Jerry McKnight

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Box 25046 M.S. 421
Denver Federal Center
Denver, Colorado 80225

IN REPLY REFER TO:

MEMORANDUM

April 26, 1999

To: Distribution, Information Services, Box 25286, DFC, Denver, Colo.

From: Tim Brady, YMPB, Denver, Colo., M.S. 421

Re: PUBLICATIONS—ERRATA sheet for Water-Resources Investigations Report 98-4050, "Hydrogeology of the unsaturated zone, north ramp area of the exploratory studies facility, Yucca Mountain, Nevada", edited by J.P. Rousseau, E.M. Kwicklis, and D.C. Gillies

Attached are replacement pages containing corrections for the above listed report. The changes occur for pages 126, 127, and 188.

Apologies are made for any inconvenience this may have caused.

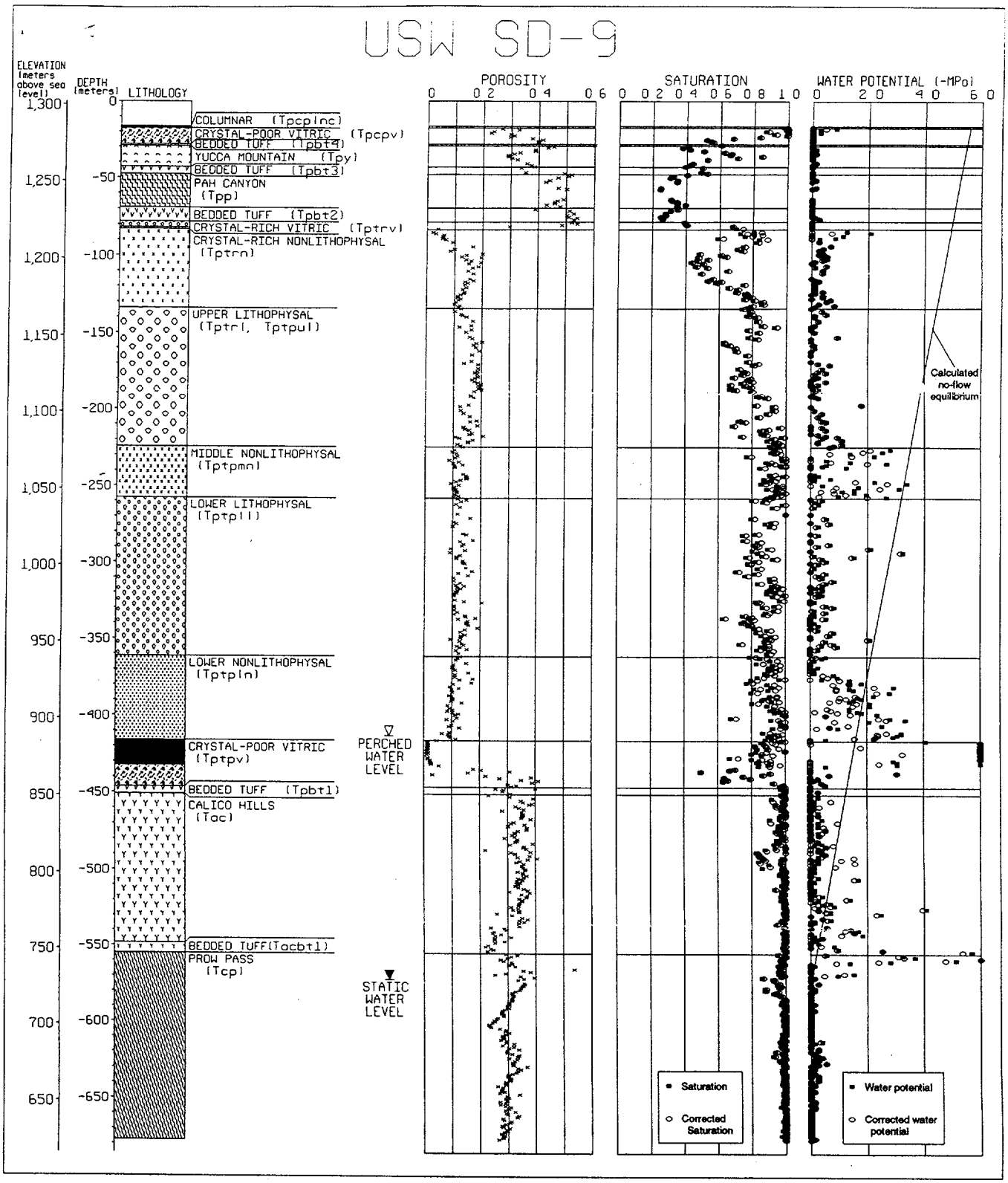

Figure 81. Porosity, saturation, and water-potential data for borehole USW SD-9. Open circles represent corrected saturation and water potentials to account for water losses during drilling and handling. The theoretical no-flow water-potential profile, referenced to the water table, is shown with the water-potential data.

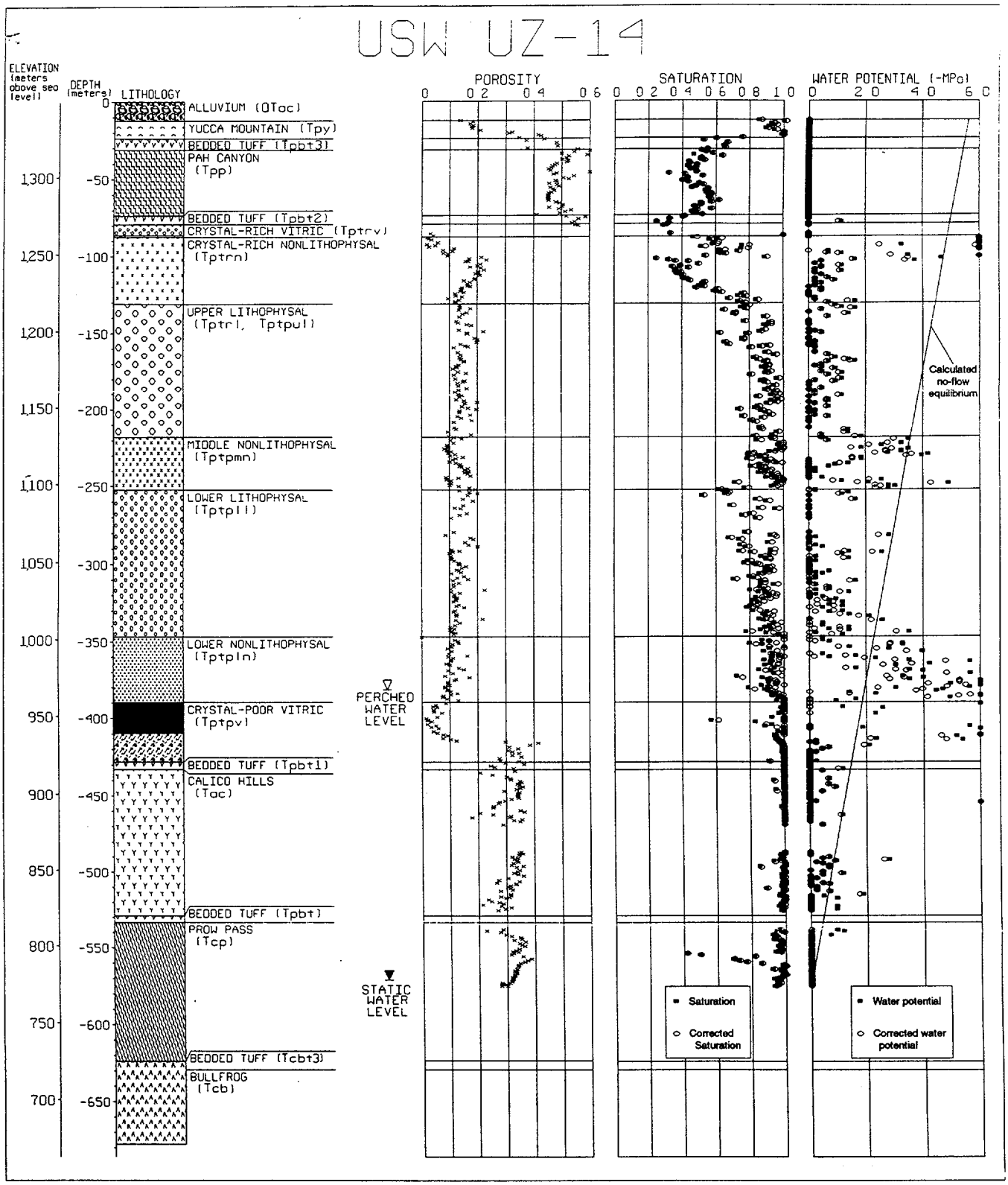

Figure 82. Porosity, saturation, and water-potential data for borehole USW UZ-14. Open circles represent corrected saturation and water potentials to account for water losses during drilling and handling. The theoretical no-flow water-potential profile, referenced to the water table, is shown with the water-potential data.

Table 20. Summary calculations of vertical and horizontal heat flow at UE-25 UZ#4 and UE-25 UZ#5 in Pagany Wash

[w, welded; nw, nonwelded; J/s/m/°C, joule per second per meter per degree Celsius; mJ/s/m^2, millijoule per second per meter squared; --, not applicable or no data]

	Vertical Heat flow						Horizontal Heat flow			
	UE-25 UZ#5			UE-25 UZ#4			UZ#4 to UZ#5			
Lithostratigraphic unit	Pah Canyon Tpp (nw)	Yucca Mountain Tpy (nw)	Tiva Canyon columnar Tpcplnc (w)	Pah Canyon Tpp (nw)	Yucca Mountain Tpy (nw)	Tiva Canyon columnar Tpcplnc (w)	Pah Canyon Tpp (nw)	Yucca Mountain Tpy (nw)	Tiva Canyon columnar Tpcplnc (w)	Comments
Instrument stations	C-D	E-F	H-I	C-D	E-F	G-H				
Distance between instrument stations (meters)	32.34	8.79	13.26	32.33	9.78	13.41	38.11[a]	38.11[a]	38.11[a]	[a]Distance between boreholes.
Difference in temperature between stations (degree Celsius)	1.91	0.37	0.26	1.67	0.26	0.05	0.28[b]	0.72[b]	1.24[b]	[b]Midpoint temperature difference between UZ#4 and UZ#5 for unit.
Temperature gradient between stations (degree Celsius per meter)	0.059	0.042	0.020	0.052	0.027	0.004	0.007	0.019	0.033	
Mean porosity of unit (number of samples)	0.514 (45)	0.404 (18)	0.10-0.15 --	0.510 (37)	0.412 (19)	0.10-0.15 --	--	--	--	
Standard deviation of porosity	0.039	0.037	--	0.043	0.047	--	--	--	--	
Mean saturation of unit (number of samples)	0.282 (45)	0.393 (18)	0.80-0.90 --	0.319 (35)	0.537 (18)	0.80-0.90 --	--	--	--	
Standard deviation of saturation	0.075	0.010	--	0.112	0.139	--	--	--	--	
Thermal conductivity[1] (J/s/m/°C)	0.265	0.576	1.61-1.82	0.295	0.642	1.61-1.82	0.280	0.609[c]	1.61-1.82[c]	[c]Average of UZ#4 and UZ#5 for unit.
Heat flux[2] mJ/s/m^2	15.6	24.2	32.2-36.4	15.3	17.1	6.4-7.3	2.0	11.6	53.1-60.1	Expressed in comparison to mJ/s/m^2 for Sass and others (1988).

[1]Computed from Rautman's model for thermal conductivity of welded and nonwelded tuffs (Rautman, 1995).

[2]Estimate for Topopah Spring Tuff: 32 to 40 mJ/s/ m^2 (temperature gradient is 0.0176 to 0.0248 °C/m; thermal conductivity is 1.61 to 1.82 J/s/m/°C. (See also heat-flow map, Sass and others, 1988, fig. 15.)