UNITED NUCLEAR CORPORATION

1720 Louisiana N.E.
Suite 400

Albuquerque, New Mexico 87110
Telephone 505/262-1800
Fax 505/262-1809

January 29, 1998

U.S. Nuclear Regulatory Commission
ATTN: Joseph J. Holonich, Chief
High Level Waste and Uranium Recovery
Projects Branch
Division of Waste Management, MS-T-7J9
Office of Nuclear Materials Safety and Safeguards
11545 Rockville Pike
Rockville, MD 20850

Re: SUA-1475 1997 Ground Water Corrective Action Plan Report

Dear Mr. Holonich:

Enclosed for your review are five copies of United Nuclear Corporation's 1997 Ground Water Corrective Action Plan Annual Report in accordance with Condition 30 of our license No. SUA-1475.

This report contains recommendations for the United Nuclear seepage collection program based on over nine years of operations. The issues raised by these recommendations have been the subject of significant debate for a number of years between United Nuclear and the NRC and EPA. The recommendations in this report are the same as those contained in the Annual Review Report submitted to your office on December 27, 1996 as follows, and are summarized in the attached Executive Summary.

Based on the evaluation of the data available as of the end of the third quarter of 1997 United Nuclear recommends the following actions by NRC and EPA:

1. Change or eliminate the background and cleanup levels for Nitrate, Sulfate, and TDS as previously recommended by United Nuclear and concurred with by NRC in its statistical analysis report dated June, 1996.

2. Allow United Nuclear to shut down and decommission the Zone 1 seepage collection system as the goals of the approved Correction Action Plan have been met. There is no longer any water which can be removed from the formation in the vicinity of the site. Borrow Pit No. 2 was dewatered and reclaimed over four years ago, thus removing the source of recharge to Zone 1.

3. Allow United Nuclear to shut down and decommission the Southwest Alluvial seepage collection system as the goals of the approved Corrective Action Plan have been met. The hydraulic curtain across the valley at the prescribed location down-gradient from the South Pond was constructed several

NL05

years ago and continues to be maintained. The South Pond has been completely recontoured and reclaimed in accordance with the approved plan, cutting off the source of recharge from the tailings facility to the southwest alluvium. Finally, it has been demonstrated by United Nuclear to the satisfaction of all of the agencies concerned that the Southwest Alluvial system is collecting background quality water. Further operation of the system will not result in water quality improvement at that location.

4. Allow United Nuclear to shut down and decommission the Zone 3 seepage collection system. The data presented in this report confirms that while there remains water that can be removed from the formation, the portion of the formation impacted by seepage has been dewatered to the extent that most of the seepage collection wells have become very inefficient. The majority of the wells individually pump approximately 0.5 gallons per minute. Well efficiency has dropped significantly and is expected to continue to drop in the future such that continued operation of the system will be impracticable. Even with continued removal of water from Zone 3 no improvement of water quality is expected.

We have been informed by Mr. Greg Lyssy that the EPA will release a draft of the Five Year Review for the Church Rock Site for our review and comment before the end of the month. We are anxious to review this document and proceed with steps that will lead to termination of our license and resolution of the EPA 106 Order.

We look forward to working with you on this matter in 1998.

Sincerely,

Juan R. Velasquez

cc: Greg Lyssy - EPA
Ed Morales

OATH & AFFIRMATION

I, Juan R. Velasquez, do solemnly swear and affirm that to the best of my knowledge, the information enclosed herewith is true and correct, under the pain of penalties and perjury.

By: _____
President & Manager of Environmental Affairs
United Nuclear Corporation

This 26th day of January, 1998 appeared before me, the undersigned, a notary public of the county of Bernalillo, and state of New Mexico, Juan R. Velasquez, and did solemnly swear and affirm that the enclosed information is true and correct to the best of his knowledge.

Witness my hand and official seal.

OFFICIAL SEAL
STEPHEN LLOYD IRISH
NOTARY PUBLIC
STATE OF NEW MEXICO

_____
Notary Public

My Commission Expires:

MAY 03 1999

1997 GROUND WATER CORRECTIVE ACTION ANNUAL REVIEW
UNITED NUCLEAR CORPORATION'S
CHURCH ROCK MILL AND TAILINGS FACILITY
GALLUP, NEW MEXICO

EXECUTIVE SUMMARY

Introduction

This report presents the 1997 Annual Review for the ground water corrective action program at United Nuclear Corporation's (United Nuclear's) Church Rock site in Gallup, New Mexico. This report is the ninth in the series and covers the seepage corrective action programs implemented in 1989 that have now operated for a full eight years.

The data collected in 1997 continue to confirm that the effects predicted in the Remedial Design (RD) Report are taking place or have taken place and that they are meeting the specific objectives of the Record of Decision (ROD)-selected remedy for each formation. These corrective action programs and their effects are summarized below and in Table ES-1, which presents the third quarter 1997 water quality data for the point of compliance (POC) wells. Review of the data shows that one of three general conditions exists at the POC wells:

1. The water quality standards at the POC well are being met.
2. The POC well is dry.
3. The standards are exceeded at the POC well and will not be improved by continued corrective action.

These conditions have persisted over a period of several years and, based on the site conditions, will not change substantially in the future. The corrective action is clearly at a point where a decision must be made as to how to proceed with the program in the future. Continued corrective action will not provide any benefit in terms of

improving the water quality at the POC wells. United Nuclear hopes that the U.S. Environmental Protection Agency's (EPA's) pending five-year review will address the issues associated with background water quality and system operation. United Nuclear also hopes that this will allow the decision to terminate operation of the corrective action program at the site to be made in the near future.

Southwest Alluvium

The Southwest Alluvium extraction wells operated as required in 1997 to maintain the hydraulic barrier to seepage. As in previous years, the performance monitoring data demonstrate that the water quality in the area impacted by tailings seepage is comparable to upgradient and downgradient background water.

As shown in Table ES-1, the Nuclear Regulatory Commission (NRC) cleanup standards and EPA applicable or relevant and appropriate requirements (ARARs), with the exception of nitrate, sulfate and total dissolved solids (TDS), are being met at the POC wells. The exceedances of other constituents such as chloroform and manganese are isolated and, in the case of chloroform, are well below the maximum contaminant level

United Nuclear has recommended that the EPA and NRC eliminate nitrate as a constituent of concern and revise the site cleanup standards for TDS and sulfate to the background levels recommended in the Statistical Analysis Report (Canonie Environmental Services, 1993a). The site cleanup standards established in the ROD (EPA, 1988c) for these constituents are consistently exceeded in both the upgradient and downgradient alluvial background water. In 1996, NRC also recommended revising and/or eliminating the remediation standards for these constituents (NRC, 1996). Based on recent conversations, the EPA is nearing completion of its five-year review which reportedly will include a consensus on background water quality and continued operation.

The objective of restoring the Southwest Alluvium water quality to background to the maximum extent practicable and necessary to protect public health and the environment has been met. Therefore, continued operation of the system is no longer practical and should be terminated.

Zone 3

The Zone 3 extraction wells operated as required in 1997 and are continuing to dewater the target area, thereby returning this area to its original unsaturated condition. This activity meets the overall objective of restoring the Zone 3 water quality to background and the specific objective of containing and removing contaminated water from the Zone 3 formation.

The annual performance monitoring review demonstrates that the area of Zone 3 impacted by seepage has lost an average of more than 50 percent of its 1989 saturated thickness as a result of extraction pumping. Because of the reduction in saturated thickness, ten wells met the criteria for decommissioning and nine of these wells were turned off in 1993 with NRC and EPA approval. Since 1993, nine additional wells have met the criteria for decommissioning. United Nuclear requested permission to decommission eight of these additional wells in 1996. However, to date, the NRC and EPA have not responded to the request to turn them off. The ninth well met the criteria for decommissioning in 1997. The request to turn off the eight wells is reiterated in this report and is modified to include the ninth well that now also meets the decommissioning standards.

Figure ES-1 graphically illustrates the decline in productivity of the nine wells over time and how the reduced rates relate to the decommissioning criteria. As shown, with the exception of Well 720, all the wells have pumped at rates below the decommissioning criterion level of 1.0 gallon per minute (gpm) for a minimum of three consecutive years. This condition has persisted even after repeated cleaning and stimulation as required by the Corrective Action Plan (CAP) (United Nuclear, 1989a).

The low productivity and efficiency of the wells significantly affects the operation and maintenance of the Zone 3 system. During 1997, these wells were shut down for an average of more than 11 weeks for repair and cleaning. The cost to maintain these wells far exceeds the benefit gained from continuing operation. Also, replacing these wells is not a viable alternative because the limited saturation in this portion of Zone 3 restricts the efficiency and, therefore, the productivity of wells.

Of the 24 original corrective action system wells, only four wells remain that pump at rates greater than 1.0 gpm per well. Three of these wells are located downgradient of the seepage impacted plume, and, because of their relatively higher productivity, more than 83 percent of the water being extracted is background water. The relative percentage of extracted seepage-impacted water will continue to diminish as less alluvial water recharge occurs and water levels continue to decline.

The corrective action in Zone 3 has reached the point where continued extraction is not justified because no benefit will be realized in terms of improving water quality or protecting human health and the environment. Table ES-1 shows that three of the five POC wells are dry as a result of the dewatering. The remaining two POC wells have exceedances of the cleanup standards for 12 of the 21 performance monitoring analyses. Continued extraction will not result in improvement in water quality at these POC wells because, based on the projected declines in well productivity, only approximately half of the impacted water remaining in Zone 3 can be removed. Also, maintenance of the extraction system is requiring a large amount of effort to keep the wells operational. Shutdown of the system for maintenance causes further reductions in productivity. Considering that the corrective action is being implemented in a formation that contains only temporary saturation and is not now and will not be a water resource in the future, Zone 3 corrective action is no longer practical and should be terminated.

Zone 1

The Zone 1 extraction wells operated as required in 1997. However, corrective action in Zone 1 has been completed to the maximum extent practical and in accordance with the provisions of the ROD (EPA, 1988c), the CAP (United Nuclear, 1989a) and the RD Report (Canonie, 1989c). Borrow Pit No. 2 has been dewatered and reclaimed, thereby eliminating the tailings seepage source and the hydraulic force driving seepage in Zone 1. The tailings seepage mound is dissipating, both chemically and hydraulically, as a result of natural processes occurring in Zone 1.

Table ES-1 shows that water quality at the POC wells exceeds the cleanup standards for nine of the 21 performance monitoring analyses. These include nitrate, sulfate and TDS, which are exceeded in all the wells including the downgradient background Well EPA 4. However, due to the extremely low hydraulic conductivity of the formation, natural dissipation rather than active remediation is the only technically feasible method for remediating these residual seepage impacts. This portion of Zone 1 does not meet the definition of an aquifer in 10 CFR 40, Appendix A as evidenced by the fact that the Zone 1 system pumping rate was less than 0.5 gpm for all wells combined during the past two years of corrective action. Therefore, Zone 1 corrective action is no longer necessary or practical and should be terminated.

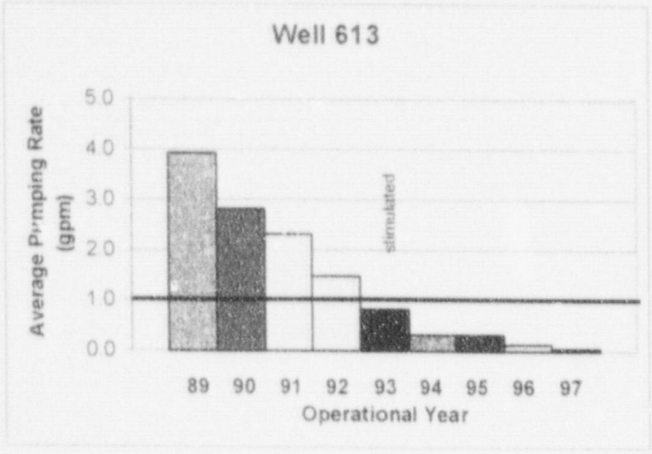
Closing Remarks

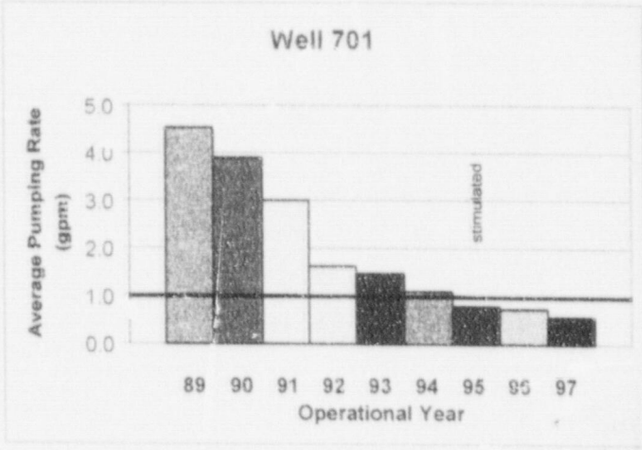
United Nuclear has been informed that the EPA's Five-Year Review will be released in the very near future. Based on conversations with EPA, United Nuclear expects the EPA's Five-Year Review to contain information that will allow us to further address the exceedances of the standards at the POC wells, discussed above, as well as operation of the corrective action systems.

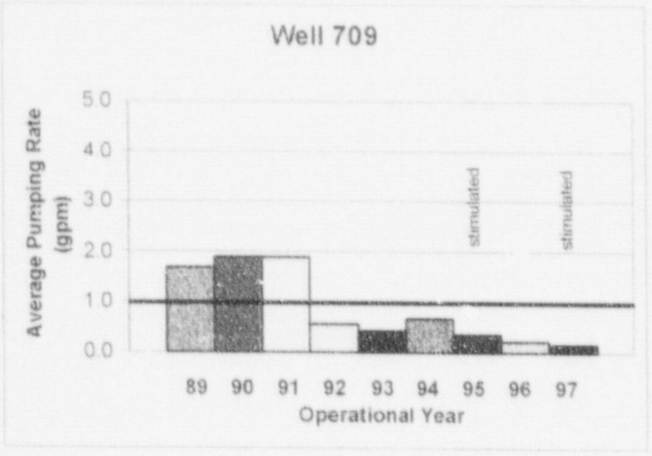
TABLE ES-1
WATER QUALITY AT POC WELLS
THIRD QUARTER 1997

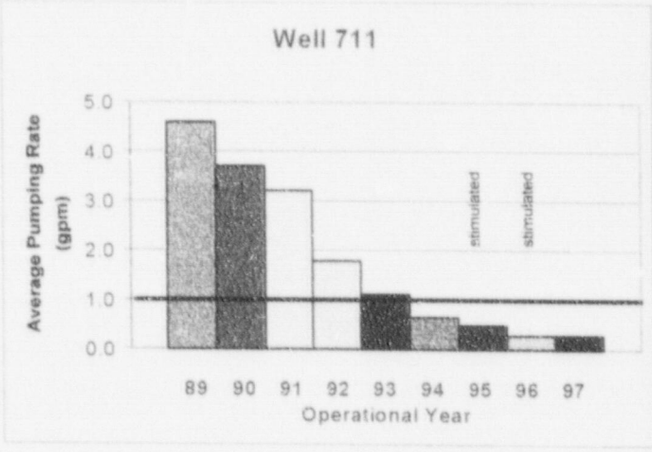
Location	POC Well No.	Lab TDS (mg/l)	SO_4 (mg/l)	NO_3 as N (mg/l)	Cl (mg/l)	Chloro-form (mg/l)	Al (mg/l)	As (mg/l)	Be (mg/l)	Cd (mg/l)	Co (mg/l)	Pb (mg/l)	Mn (mg/l)	Mo (mg/l)	Ni (mg/l)	Se (mg/l)	V (mg/l)	U (mg/l)	Ra-226+ Ra-228 (pCi/l)	Th-230 (pCi/l)	Pb-210 (pCi/l)	Gross Alpha (pCi/l)
	NRC Std	NA	NA	NA	NA	0.001	NA	0.05	0.050	0.01	NA	0.05	NA	NA	0.05	0.01	0.10	0.3	5.0	5.0	1.0	15.0
	EPA Std	3170	2160	30.0	250	NA	5.0	0.05	0.017	0.01	0.05	0.05	2.60	1.0	0.2	0.01	0.70	3.0	5.0	NA	NA	15.0
Southwest Alluvium	0509 D	6,640	2650	44.80	337.0	<0.00100	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	0.84	<0.10	<0.05	<0.001	<0.01	0.0940	1.1	<0.2	<1.0	<1.0
	0632	6,330	2560	8.15	264.0	0.00114	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	0.57	<0.10	<0.05	<0.001	<0.01	0.0770	3.3	<0.2	<1.0	<1.0
	EPA 22A	1,940	955	3.79	17.2	<0.00100	<0.10	0.001	<0.01	<0.01	<0.01	<0.05	0.27	<0.10	<0.05	0.003	<0.01	0.0320	0.3	<0.2	<1.0	<1.0
	EPA 23	4,810	2,190	33.40	99.0	<0.00100	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	3.45	<0.10	<0.05	0.001	<0.01	0.0330	0.0	<0.2	<1.0	<1.0
	EPA 28	5,360	2,810	44.60	119.0	<0.00100	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	0.19	<0.10	<0.05	0.001	<0.01	0.0250	<0.6	<0.2	<1.0	<1.0
	GW 1	4,800	2,050	116.00	173.0	<0.00100	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	0.05	<0.10	<0.05	<0.001	<0.01	0.0480	<0.1	<0.2	<1.0	<1.0
	GW 2	6,090	2,720	10.70	182.0	<0.00100	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	0.29	<0.10	<0.05	<0.001	<0.01	0.0610	0.1	<0.2	<1.0	<1.0
Zone 3	0501 B	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
	0517	5,350	3,470	71.6	2.58	0.00446	14.40	<0.001	<0.01	<0.01	0.64	<0.05	10.50	<0.10	0.51	<0.001	<0.01	0.0820	25.9	<0.2	<1.0	13.3
	0518	7,630	5,370	41.0	2.46	0.01060	106.00	<0.001	0.06	<0.01	1.14	<0.05	18.50	<0.10	0.98	<0.001	<0.10	0.3680	9.2	16.7	<1.0	18.5
	EPA 03	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
	EPA 18	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
Zone 1	0516 A	11,700	7,120	124	271	0.00226	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	1.80	<0.10	<0.05	<0.001	<0.01	0.0150	<1.8	<0.2	<1.0	<1.0
	0604	7,740	5,050	83.8	69.2	<0.00100	21.40	<0.001	0.01	<0.01	0.35	<0.05	12.40	<0.10	0.38	<0.001	<0.01	0.0030	9.5	<0.2	<1.0	4.0
	0614	8,100	4,520	223	233	0.44400	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	0.42	<0.10	<0.05	<0.001	<0.01	0.0430	<2.5	<0.2	<1.0	<1.0
	EPA 04	4,320	2,800	<0.10	38.9	<0.00100	<0.10	<0.001	<0.01	<0.01	<0.01	<0.05	2.58	<0.10	<0.05	<0.001	<0.01	0.0009	5.1	<0.2	<1.0	<1.0
	EPA 07	8,390	4,780	137	209	0.0012	0.19	<0.001	<0.01	<0.01	<0.01	<0.05	12.50	<0.10	0.11	<0.001	<0.01	0.0010	4.5	<0.2	<1.0	<1.0

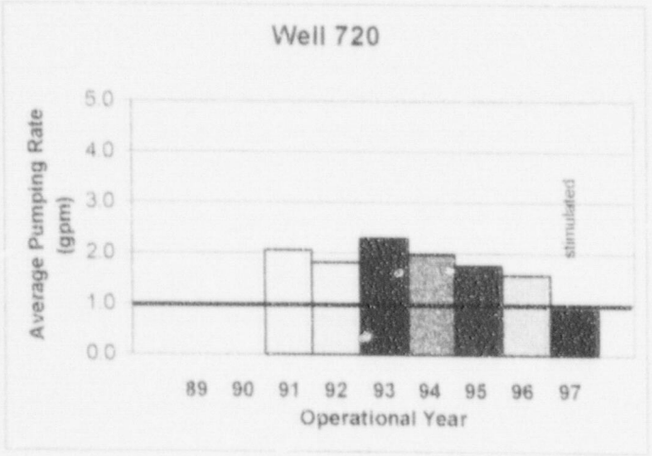
Notes:
Shading indicates an exceedance of the site cleanup standard.
"<" indicates constituent not detected above level shown.
mg/l = milligrams per liter. pCi/l = picoCuries per liter.











No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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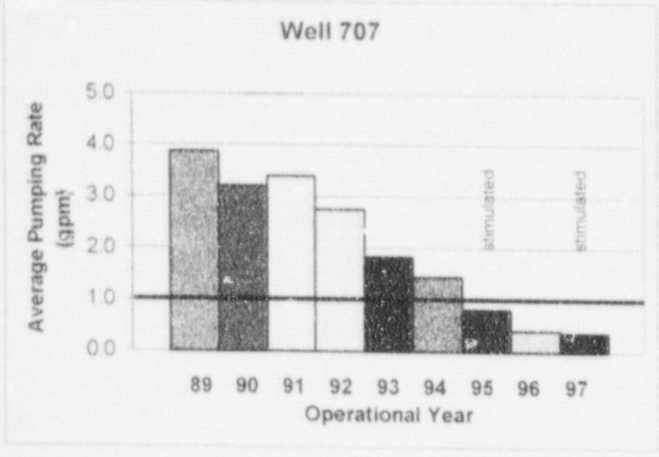

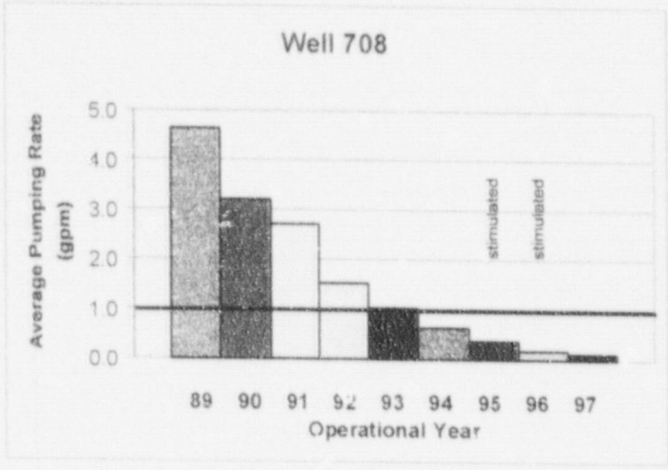

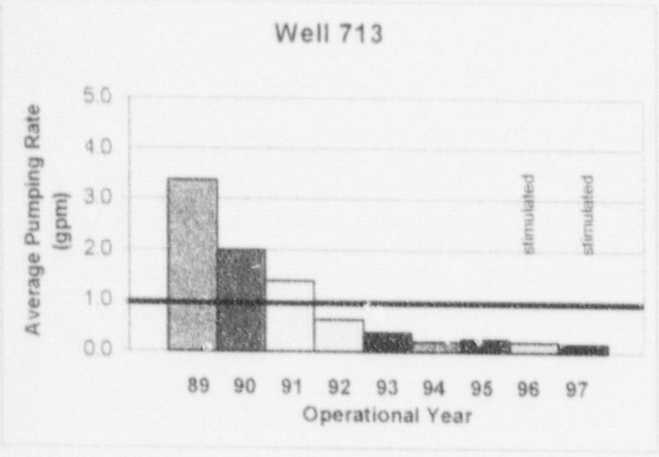

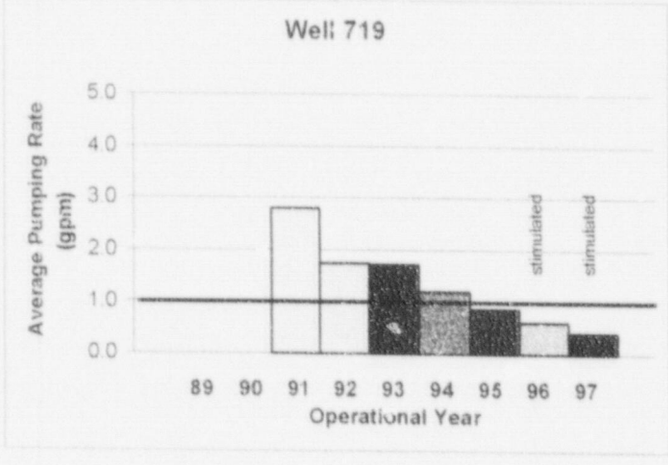

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FIGURE ES-1
SUMMARY OF ZONE 3 EXTRACTION WELL PRODUCTIVITY OVER TIME

PREPARED FOR:
UNC MINING AND MILLING
GALLUP, NEW MEXICO

RUST ENVIRONMENT & INFRASTRUCTURE

UNITED NUCLEAR CORPORATION

1720 Louisiana N.E.
Suite 400

Albuquerque, New Mexico 87110
Telephone 505/262-1800
Fax 505/262-1809

January 29, 1998

Mr. Greg Lyssy
U.S. Environmental Protection Agency
Superfund Coordinator
New Mexico Team (6SF-LT)
1445 Ross Avenue
Dallas, Texas 75202-2733

Re: SUA-1475 1997 Ground Water Corrective Action Plan Report

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We look forward to working with you on this matter in 1998.

Sincerely,

Juan R Velasquez

cc: Joseph Holonich - EPA
Ed Morales