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 BOUCHEY, G.D. Washington Public Power Supply System  
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 SCHWENCER, A. Operating Reactors Branch 2

SUBJECT: Forwards responses to Questions 371.019 & 371.020 from  
 Hydrologic Engineering Branch review for incorporation in  
 Amend 24 to FSAR.

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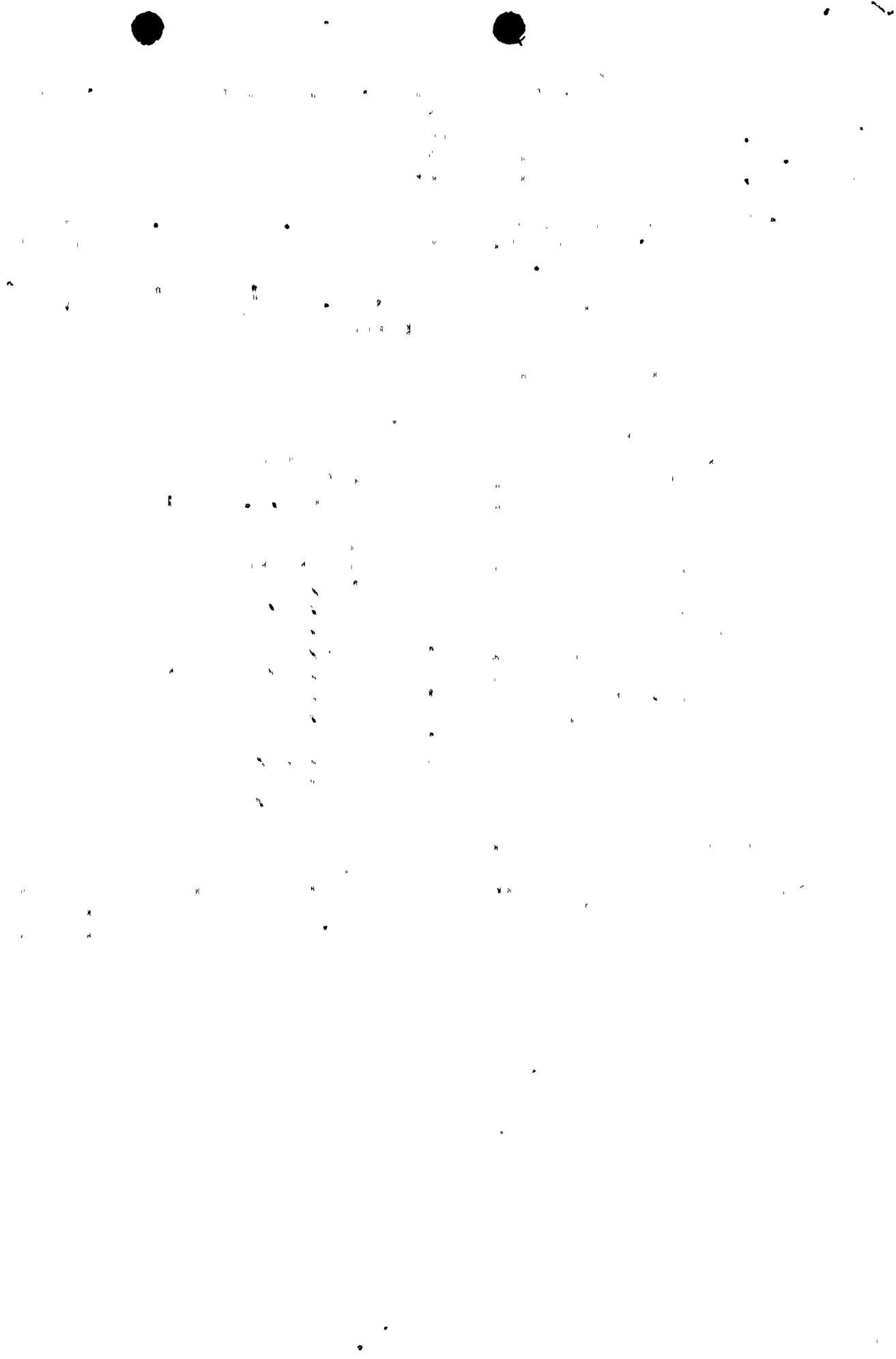
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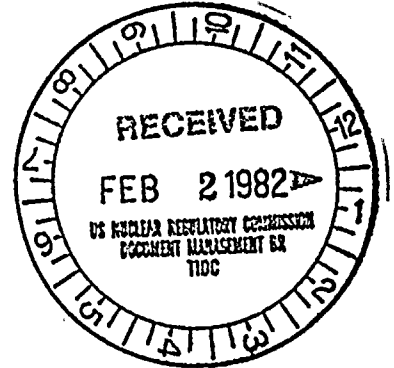
## Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

January 28, 1982  
G02-82-119

Docket No. 50-397

Mr. A. Schwencer, Chief  
Licensing Branch No. 2  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555



Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2  
HYDROLOGIC ENGINEERING SAFETY QUESTIONS

Reference: Letter, A. Schwencer to R. L. Ferguson,  
"WNP-2 FSAR Request for Additional  
Information", dated November 4, 1981

Enclosed are sixty (60) copies of Questions 371.019 and 371.020 which were transmitted in the referenced letter. This completes the responses from the Hydrologic Engineering Branch review. They will be incorporated in Amendment 24 of the WNP-2 FSAR.

Very truly yours,

A handwritten signature in cursive script, appearing to read "G. D. Bouchey".

G. D. Bouchey  
Deputy Director, Safety and Security

KSN/kp  
Enclosures

cc: R Auluck - NRC  
WS Chin - BPA  
R Feil - NRC Site

Boo  
S. 11



Q. 371-019

Provide the leakage rates that were determined during initial testing of the spray ponds. How do these rates compare with the rates used in the Battelle study? Provide an analysis that shows the maximum groundwater rise at the corner of the diesel generator building that would result from the maximum leakage rate observed during preliminary testing of the spray ponds. Provide the permeability and specific yield (effective porosity) of the compacted plant fill and other parameters used in your analysis. Since more than one aquifer (plant fill and glacio-fluvial) is involved, a sensitivity study might be appropriate.

Response:

Spray pond leakage rates were documented in a letter dated October 1, 1981, (R.G. Matlock, Supply System to R.H. Engelken, NRC, G02-81-0325, "Potentially Reportable Condition on Spray Pond Leakage"). These rates are 40 gpm for pond 1A and 80 gpm for pond 1B.

The Battelle study (Reference 2.4-7a) concluded that an unlined cooling pond east of WNP-2 could have an initial seepage loss rate of 400,000 gpm per square mile. For the combined spray pond area of 0.0045 square mile, this is equivalent to a leakage rate of 1800 gpm which may be compared with the reported leakage of 120 gpm. The study included the evaluation of several hypothetical ponds of various sizes and equilibrium leakage rates of up to 10,000 gpm. Under the extreme condition studied groundwater mounding under the ponds was predicted to be about 50 ft. Seepage of about 1000 gpm from a 1 1/2 square mile pond was calculated to raise the water table 4 ft. Another Battelle study (Reference 2.4-7b) estimated that the continuous discharge of 2700 gpm of cooling tower blowdown to the depression east of WNP-2 could result in about a 20 ft. rise in the water table beneath the point of discharge. These studies used laboratory permeabilities (average 13 ft/day) to which a correction factor of 10 was applied to derive representative field permeabilities.

The bottom of the spray ponds are at 417 ft. MSL and the bottom of the diesel generator foundation is at 434.3 ft. MSL. As indicated by Figure 2.4-28, the unconfined water table at WNP-2 is about 380 ft. MSL. The design basis groundwater level based on the possible, but highly unlikely, construction of Ben Franklin Dam is 420 ft. MSL. Figure 2.4-26 shows the most recent estimate of the water table at WNP-2 with the dam could be below 405 ft. MSL. Since the foundations are well above the actual groundwater elevation or the hypothetical elevation of 405 ft. MSL, the spray ponds and the diesel generator building will be unaffected by hydrostatic forces due to groundwater.

WNP-2

An analysis has not been performed to determine the groundwater rise at the corner of the diesel generator building. It may be inferred from the studies cited above that a leakage rate of 120 gpm would result in a negligible rise in the groundwater level. As noted in the letter referenced above, the corrective action is being taken to eliminate this leakage.