UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

January 24, 2005

Mr. James Shetler, Assistant General Manager
Energy Supply
Sacramento Municipal Utility District
6201 'S' Street
P.O. Box 15830
Sacramento, California 95852

SUBJECT: ADDENDUM TO NRC INSPECTION REPORT 050-00312/04-004; 072-00011/04-004; ANALYTICAL RESULTS FOR SOIL SAMPLES

Dear Mr. Shetler:

This letter presents the results of laboratory analyses of soil samples collected from beneath the spent fuel pool floor of the Rancho Seco Nuclear Generating Station between October 25 and 28, 2004. The analyses were conducted by Oak Ridge Institute for Science and Education (ORISE), Environmental Survey and Site Assessment Program, on behalf of the NRC. The NRC's analysis of the sample results is provided in Enclosure 1 to this letter and a copy of the ORISE report is provided in Enclosure 2.

Other than comparing the enclosed results with the split samples that were collected by your staff at the same time, no response is requested from you at this time. The NRC may conduct an integrated evaluation of the ORISE sample results with your split sample results in the future. If so the results will be included in a future inspection report.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, Enclosures 1 & 2, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/Adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Please note that on October 25, 2004, the NRC suspended public access to ADAMS, and initiated an additional security review of publicly available documents to ensure that potentially sensitive information is removed from the ADAMS database accessible through the NRC's web site. Interested members of the public may obtain copies of the referenced documents for review and/or copying by contacting the Public Document Room pending resumption of public access to ADAMS. The NRC Public Document Room is located at NRC Headquarters in Rockville, MD, and can be contacted at 800-397-4209 or 301-415-4737 or pdr@nrc.gov.

If you have any questions concerning this letter, please contact Mr. Emilio Garcia, Health Physicist, at (530) 756-3910 or the undersigned at (817) 860-8191.

Sincerely,

D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Docket No.: 50-312
License No.: DPR-54

Enclosures:
1. NRC Analysis of Sample Results
2. ORISE Report

cc w/enclosures:

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EMGarcia
SPAtwater
KEGardin
FCDB File

SISP Review Completed: spa
ADAMS: ☒Yes ☐No Initials: SPA
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ENCLOSURE 1

NRC ANALYSIS OF SAMPLE RESULTS

During the NRC inspection on October 27-28, 2004, site characterization sampling of the soil beneath the spent fuel pool floor was observed. Thirteen of the 15 planned borings through the concrete in the spent fuel pool floor had been completed. At the time of the inspection, three holes had been fully sampled and sampling was started in the fourth hole. In each hole, split spoon samples were taken at 1-meter increments down to a depth of 7 meters below the surface of the spent fuel pool floor. With this method, the samples were collected from the same ground stratum regardless of variations in spent fuel pool floor thickness. The split spoon was approximately 3 inches in diameter, 1-meter in length and was driven into the earth using a pile driver. As it was extracted from the hole, the exterior of the spoon was cleaned and the spoon with its contents was placed into a clean polyethylene bag labeled with sample date, time, and location. The sample spoon was then carried to the preparation area where it was opened. The center of the sample was collected into two scintillation vials, one for a split with the NRC. Care was taken to minimize the samples' exposure to air. The remainder of the bulk sample was sifted for rocks and collected into a clean container. A portion of the bulk sample was then transferred into a marinelli beaker for a gamma spectroscopy analysis by the licensee. Another portion of the bulk sample was transferred into a polyethylene container for a split with the NRC. Using this process, soil samples from the first four borings were split with the NRC. All four samples were extracted from the first meter of soil below the spent fuel pool floor.

Preliminary analysis results from the licensee's gamma spectroscopy analysis indicated no radioactivity levels above background. The NRC portion of the split samples were sent to the Oak Ridge Institute for Science and Education (ORISE).

ORISE analyzed the four vial samples for Carbon-14 and H-3 (tritium) using the liquid scintillation method, and the four bulk samples for Cobalt-60 and Cesium-137 using gamma spectroscopy. The results are presented below:

Nuclide	Average MDC (pCi/g)	Average Result (pCi/g)	DCGL[1] (pCi/g)
H-3	5.6	33.875	1.04E6
C-14	3.2	7.55	1.94E5
Co-60	.03	0.0175	12.2
Cs-137	.02	0.275	52.4

The analyses indicated the Co-60 concentrations were below the Minimum Detectable Concentration (MDC). All nuclide concentrations were below the licensee's proposed Derived Concentration Guideline Levels (DCGLs) for each respective nuclide.

[1]These DCGLs have not, to date, been approved by NRC.

ENCLOSURE 2

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

January 12, 2005

Mr. Scott Atwater
U.S. Nuclear Regulatory Commission
RGN-IV/DNMS/FCDB
Suite 400
611 Ryan Plaza Drive
Arlington, TX 76011

SUBJECT: ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED OCTOBER 25 AND 28, 2004 FROM RANCHO SECO - SMUD, HERALD, CALIFORNIA (INSPECTION REPORT #50-312/2004-04) [RFTA NO. 05-001]

Dear Mr. Atwater:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) received eight soil samples on November 2, 2004 that were collected from October 25, 2004 through October 28, 2004 at Rancho Seco - SMUD. Four of the samples were received in Marinelli beakers and were analyzed for cobalt-60 and cesium-137 by gamma spectroscopy (GS) (Procedure CP1, Revision 14). The remaining four samples were received in scintillation vials and were analyzed for carbon-14 and tritium by liquid scintillation analysis (LSA) (Procedure AP6, Revision 14; CP4, Revision 3). The GS and LSA data are presented in Tables 1 and 2, respectively.

ESSAP's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

This letter report was delayed due to problems with the counting and processing instrumentation used in the carbon-14 and tritium analytical process. We apologize for this delay and hope that the delay has not placed an undue burden on your report process.

Please contact me at (865) 241-3242 or Wade Ivey at (865) 576-9184 with any questions or comments.

Sincerely,

Wade P. Ivey for

Dale Condra
Laboratory Manager
Environmental Survey and
Site Assessment Program

RDC/WPI:ar

Enclosure

cc: T. McLaughlin, NRC/NMSS/TWFN 7F27
E. Knox-Davin, NRC/NMSS/TWFN T8A23
E. Garcia, NRC Region IV
E. Abelquist, ORISE/ESSAP
T. Vitkus, ORISE/ESSAP
File/1636

Distribution approval and concurrence:	**Initials**
Technical Management Team Member	
Quality Manager	QTP

ORISE TABLE 1

SELECTED GAMMA EMITTING RADIONUCLIDE CONCENTRATIONS IN SOIL SAMPLES BY GAMMA SPECTROSCOPY PROCEDURE CP1 - REVISION 14 RANCHO SECO - SMUD 11/04 HERALD, CALIFORNIA

ESSAP Sample ID	NRC REGION IV Sample ID	Radionuclide Concentrations[a] (pCi/g)	
		Co-60	Cs-137
1636S0002	SB8120070DS01	0.04 ± 0.03[b]	0.86 ± 0.07
1636S0004	SB8120070DS05	0.02 ± 0.02	0.06 ± 0.02
1636S0006	SB8120070DS10	0.00[c] ± 0.01	0.09 ± 0.02
1636S0008	SB8120070DS14	0.01 ± 0.01	0.09 ± 0.02

[a]The average MDC for Co-60 is 0.03 pCi/g and for Cs-137 is 0.02 pCi/g.

[b]Uncertainties represent the 95% confidence level, based on total propagated uncertainties.

[c]Zero value is due to rounding.

ORISE TABLE 2

CONCENTRATIONS OF TRITIUM (H-3) AND CARBON-14 (C-14) BY LIQUID SCINTILLATION ANALYSIS PROCEDURE AP6, REVISION 14; PROCEDURE CP4, REVISION 3 RANCHO SECO - SMUD 11/04 HERALD, CALIFORNIA

ESSAP Sample ID	NRC REGION IV Sample ID	Radionuclide Concentrations[a] (pCi/g wet weight)	
		H-3	C-14
1636S0001	SB8120070DS99	43.8 ± 5.0[b]	6.5 ± 2.1
1636S0003	SB8120070DS98	80.9 ± 6.8	13.8 ± 2.3
1636S0005	SB8120070DS97	2.8 ± 3.2	5.7 ± 2.0
1636S0007	SB8120070DS96	8.0 ± 3.4	4.2 ± 2.0

[a]The average MDC for H-3 is 5.6 pCi/g wet weight and for C-14 is 3.2 pCi/g wet weight.

[b]Uncertainties represent the 95% confidence level, based on total propagated uncertainties.