UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

March 29, 2006

Docket No. 04007455 License No. SMA-1018
Control No. 137796

Kevin Taylor, P.E.
Radiation Safety Officer
EnergySolutions, LLC
Whittaker Corporation
17 College Street
Suite D
Greenville, SC 29601

SUBJECT: WHITTAKER CORPORATION, REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 137796

Dear Mr. Taylor:

This is in reference to your letter dated January 20, 2006 forwarding Revision 2 of the proposed Final Status Survey Plan (FSSP) for Section 2 of the Whittaker site in Greenville, Pennsylvania. On October 5, 2005, you requested approval of the FSSP for Section 2 of the Whittaker site. On October 18, 2005 and January 9, 2006, we requested additional information on the FSSP. Thank you for responding to those requests. Further review of the FSSP by the Oak Ridge Institute for Science and Education (ORISE) yielded the comments provided in this letter. In order to continue our review, we need the following additional information:

1. The FSSP does not describe the application of either the Elevated Measurements Comparison (EMC) or investigation levels for scanning, as described in the Multi-Agency Radiation Survey and Site Investigation manual (MARSSIM) Sections 5.5.2.4 and 5.5.2.6, respectively. NRC staff assumes that these evaluations are not being utilized because the minimum detectable concentration for scanning (ScanMDC) is below the derived concentration guideline level (DCGL), and that any readings exceeding the DCGL would be investigated and remediated accordingly. Please provide a discussion of the intended methods for assessing areas with elevated levels of radioactivity and any application of the EMC that may be utilized. You may refer to the MARSSIM sections listed above and to NUREG-1757, Vol. 2, “Consolidated NMSS Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria” Sections 4.1 and 4.4 for additional guidance.

2. The FSSP Sections 1.0 and 3.0 allow for modifications to the FSSP and to the Data Quality Objectives (DQOs), respectively. Please discuss what types of modifications are allowed such that the intent of the FSSP is still met and the survey design is not changed without prior NRC approval.

3. The FSSP Section 2.0 discusses application of the unity rule to the site contaminants. Following that discussion, a DCGL is derived for thorium-232+D (thorium-232 in

equilibrium with its decay daughters) using the unity rule and a stated fixed relative fraction of the contaminant radionuclides. It is not clear if this thorium-232+D DCGL is being derived for use as a surrogate DCGL or if this was included as an example of how the unity rule may be applied. Please provide clarification of the purpose of this DCGL for thorium-232+D.

4. The FSSP Section 2.1 states that Class 2 survey units will receive a 10% walkover survey and discrete sampling. However, the FSSP Section 4.2.2 states that the Lowland Class 2 survey units will receive a 10-50% walkover survey. Please modify Section 2.1 to state that the Class 2 survey units will receive a minimum 10% walkover survey.

5. The FSSP Section 2.2 states that calculating the ScanMDC assuming all activity is from thorium-232+D is the "most conservative approach since the thorium-232+D DCGL is less than the uranium-238+D DCGL". While the staff concurs that using thorium-232+D as the surrogate for scanning is likely the most conservative approach, this is not due to the lower DCGL. As discussed in MARSSIM Section 6.7.2.1, the ScanMDC is dependent on the energy and yield of the radionuclide gamma emissions. The FSSP should be revised to indicate why the use of thorium-232+D as the surrogate for scanning is the most conservative approach. This may be done by also calculating the ScanMDC for uranium-238 and for uranium-238+D and showing that the thorium-232+D ScanMDC is the lowest value.

6. The FSSP Section 2.2 describes the 2.8 FR/h value as the "ScanMDC", however, a more appropriate term is "minimum detectable exposure rate". Please revise this section to provide clarification.

7. The FSSP Sections 2.2 and 2.3 state that portable survey instruments will receive daily response checks. MARSSIM Section 6.5.4 recommends (on page 6-27) performing response checks twice daily when in use, typically at the start and completion of the day's measurements. Please either modify the FSSP to state that response checks will be performed twice daily in accordance with MARSSIM or provide alternative assurance of instrument response (e.g. if response checks will be performed daily, that the same instrument will be used every day, which will reasonably assure the validity of the previous day's measurements).

8. The FSSP Section 4.1 describes the Section 2 survey unit S2 SU4. The plan states that some grids in this section were not excavated because "there was no evidence of significant volumes of buried slag in these areas". Please provide additional information on this evaluation and the meaning of 'significant volumes'. Provide reference to any earlier sampling that may have been performed in those locations to verify that excavation was not required.

9. The FSSP Section 4.2 describes how the riverbed will be scanned, and states that a water-tight housing will be used, if necessary based on water level. This section also describes earlier sediment samples from the riverbed, and comparison of their analysis results to the soil DCGLs. Please address any impact the use of a water-tight housing may have on the ScanMDC. Also, please provide additional information on the

applicability of the soil DCGLs to sediment material. In particular, the soil DCGLs were determined based on an industrial use scenario, which may not be an appropriate scenario for riverbed sediment. You may wish to consider either surveying the riverbed sediment using background radiation levels as your investigation criteria, developing DCGLs specific to the riverbed sediment, or removing the riverbed from the Section 2 FSSP and addressing this area in a later survey.

10. Chapter 9 of the MARSSIM describes the recommended elements of an acceptable Quality Assurance/Quality Control (QA/QC) program. Please describe or provide reference to the QA/QC program that will be implemented for this FSSP.

11. The FSSP Appendix B provides the calculations for the number of sample points for the survey units.

    A. In the calculation of the relative shift, the standard deviations are normalized using the unity rule. The FSSP states that the standard deviation for thorium-232 and radium-226 are 1.48 and 0.52 pCi/g, respectively. Please provide a reference to the survey data that was used to determine these values. Additionally, the radium-226 standard deviation is applied in the calculation to both the uranium-238 DCGL and the uranium-238+D DCGL. Please provide additional information on the survey data that indicates the radium-226 standard deviation may be applied to uranium-238 that is not in equilibrium with its daughter products.

    B. The DCGL for uranium-238+D that is listed in the calculation should be 9.7 pCi/g, instead of 9.4 pCi/g.

    C. The probability (P_r) that a random measurement from the survey unit exceeds a random measurement from the background reference area by less than the DCGL is listed as being obtained from the MARSSIM Table 5.1, at a value of 0.946. For a relative shift of 2.28, the P_r value from table 5.1 should be 0.944.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Medical, Industrial, and Academic Uses of Nuclear Material;** then **Toolkit Index Page.** Or you may obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 9:00 p.m. EST, Monday through Friday (except Federal holidays).

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 137796. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5240.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we will assume that you do not wish to pursue your application.

Sincerely,

Original signed by Marjorie McLaughlin

Marjorie McLaughlin
Decommissioning Branch
Division of Nuclear Materials Safety

cc:
Eric G. Lardiere, Vice President, General Counsel, & Secretary
Rich Moss, Project Manager
Robert C. Maiers, Nuclear Engineer

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