8 QUALITY ASSURANCE

The various activities and requirements to be implemented to su pport collection of data of the quality necessary to support decision making for the isolation/thermal barrier investigation and design are presented in this work plan. This section provides an overview of the specific data quality objectives for the anal ytical laboratory data. A listing of where the various requirements of a quality assurance project plan (QAPP) are located in this work plan is also included. In addition, the specific data validation procedures to be employed to assess the quality of the data provided by the analytical laboratory are presented in this section.

8.1 ANALYTICAL DATA QUALITY OBJECTIVES

Samples of waste/soil material will be obtained and submitted to Eberline for determination of radionuclide activity levels. As discussed in Sec tion 1.1.1 of this work plan, RIM is defined as materials that contain any of the following:

- Combined radium-226 and radium-228 at levels greater than 5 pCi/g above background (e.g., 7.9 pCi/g);
- Combined thorium -230 and thorium -232 at levels greater than 5 pCi/g above background (e.g., 7.9 pCi/g); and
- Total uranium greater than 50 pCi/g plus background (e.g. 54.5 pCi/g) [EMSI, 2011].

The MDA levels for analytical methods listed on Table 1 should provide data of sufficient quality to allow for characterizat ion of the waste/soil samples necessary to identify any occurrences of RIM in the areas being considered for construction of an isolation/thermal barrier.

Analytical data will also be developed to assess worker doses and verify that particulate concentrations of radionuclides in air do not pose a risk to the general public. Specifically, the particulate filter samples will be submitted to Eberline for analysis of thorium -230. As discussed in Section 6 of this work plan, the effluent limit for airborne tho rium-230 established by the N RC (10 CFR Part 20 Appendix B, Table 2) is $3x10^{-14}$ µCi/ml. Therefore, the minimum detectable concentration (MDC) required from the analytical laboratory to determine compliance with the thorium-230 effluent limit will be less than $3x10^{-14}$ µCi/ml. Assuming that all of the alpha emissions result from decay of thorium -230, the MDC for gross alpha in a sample containing 1.8 x 108 mL (60 liters per minute for 50 hours) will be $2.8x10^{-14}$ µCi/ml. Extending the sample duration to tw o full weeks (100 to 120 hours) will produce a sample volume of approximately 3.6×10^{8} or more, and result in minimum detectable concentrations for gross alpha and thorium-230 of 1 to 2×10^{-14} µCi/ml. Therefore, the proposed sampling and analyses should provide data of sufficient quality to evaluate potential particulate occurrences of radionuclides in air.

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