

U.S. ENVIRONMENTAL PROTECTION AGENCY  
COMMENTS REGARDING  
DRAFT FIELD SAMPLING, ANALYSIS, AND  
QUALITY ASSURANCE PROJECT PLAN  
STANDLEY LAKE DIVERSION PROJECT

**General:** Characterization of the exposure setting is the first step in the design of a field sampling plan (FSP) to support risk assessment. This characterization requires a definition of the following:

- a. activities which may result in release of hazardous substances and potential exposure;
- b. populations of interest; and
- c. potential release mechanisms, transport media, and exposure pathways.

From this information, field sampling is developed to provide data to quantify exposure pathways of interest.

In the case of the Standley Lake Diversion Project, characterization of the exposure setting has not been adequately completed. Consequently, the resulting FSP is deficient. The stated objective of the risk assessment is to evaluate the potential risks resulting from the construction of the Standley Lake diversion canal. Therefore, the FSP must be revised to contain details of the construction activities such as the anticipated depth of excavation, the maximum areal extent of the disturbance, the type of equipment which will be used, the distance to the nearest receptors, the identification of those potential receptors (including those who are possibly more sensitive to certain types of exposures), the duration of the construction activities, and the time of year construction will occur.

A conceptual model of possible contaminant releases due to the construction activities will logically follow, and a sufficient sampling plan can then be developed to characterize the exposure pathways. All of this information is crucial to the completion of a risk assessment and must be developed as part of the FSP. The following comments provide specific details about revisions to the FSP to accomplish the objectives of the cities of Westminster, Northglenn, and Thornton in undertaking this work.

**Specific Comments:**

Page 5, Section 2.2, Objectives: Recreational users of Standley Lake are also potential receptors who may be closer to the construction activities than the residents and who may be engaged in activities resulting in higher exposure (e.g., elevated breathing rate, greater amount of dermal contact). There is no evidence in this FSP that these receptors have been considered.

Also, the effect that resuspension of contaminated soil may have on the ecosystem is ignored. The objective of the FSP must be expanded to provide data on which to base a risk assessment for both human health and the environment.

Page 6, first paragraph: The FSP indicates an intention not to characterize soils and sediments nor to profile them vertically or surficially. This is a deficiency in the FSP. The construction activities will result in excavation deeper than the surface soils. Without the vertical profile of contamination, the contaminant source term is not defined and the contaminant concentration of suspended particulates can not be quantified. The resulting risk assessment will be inadequate without this data.

Page 6, second paragraph: As stated previously, vertical profile sampling such as that planned for Operable Unit 3 is considered by EPA to be basic data needed for the risk assessment. DOE is planning to collect vertical profile data in two areas within the vicinity of the diversion canal project. EPA suggests that DOE expedite this work to ensure that the necessary data is available to conduct this risk assessment. Without it, the risk assessment will be considered incomplete.

Pages 8-9, Items 1-6: Provide references for the information in this section of the FSP.

Page 9, Item 5: This conclusion is related only to plutonium. It is also qualified by the fact that the data on which it is based is considered to be of insufficient quality for risk assessment purposes. These qualifications should be explicitly stated in the FSP and taken into account in the design of this new program. For example, on page 18, the FSP indicates that the cities intend to compare the new data with existing CDH data. More detail is required regarding how such a comparison will be made and why, given the qualifications on the existing data.

Page 9, Item 6: As in the previous comment, this conclusion only relates to plutonium. This should be explicitly stated.

Page 10, first paragraph: Include an analysis of the detection limits compared to risk specific concentrations to ensure that the proposed detection limits are appropriate.

Page 10, last paragraph: Contamination of the land surface by organic herbicides and fertilizers is recognized but it is not addressed in the FSP. Because of the likelihood of resuspension of these substances due to construction activities and the need for an assessment of the cumulative effects of potential exposure to multiple contaminants, these substances need to be included in some way in the FSP. Either provide more rationale for not including them in the suite of analytes, or include them.

Page 18, Section 5.1, Soil Sampling: To sample only the top 1/4 inch of soil is inconsistent with the information on page 8 which indicates that 99% of the total plutonium inventory is contained in the upper 8 inches of soil. The FSP must include collection of data to establish the vertical profile of contamination in the soils. Also, as EPA has stated previously in the enclosed letter to the City of Westminster, composite soil samples will not identify discrete hot spots of contamination which may be of concern during construction of the canal. Include sampling in the 0-5 cm, 5-10 cm, and 10-15 cm intervals in a number of locations along the proposed canal alignment to address both of these concerns.

The CDH soil sampling protocol is intended to evaluate the inhalation risks due to resuspension of soils from natural wind events. This risk assessment addresses construction activities which can not be considered as natural release mechanisms. Therefore, the CDH protocol is inappropriate in this instance. This is partly due to the fact that the 10 acre parcels appear to be oriented so that only a portion of the 25 subsamples to be composited will be gathered from the actual alignment area. EPA suggests that the parcels be redesigned to collect data within the construction area and that this data be supplemented with vertical profile sampling and hot spot sampling.

Page 18, Section 5.1, Sediment Sampling: Because a conceptual model has not been developed for this assessment, the purpose of the sediment sampling is unclear and it is difficult to evaluate. If the purpose of this sampling is to characterize existing contamination which may be transported downstream as a result of the diversion, EPA suggests that the cities analyze existing sediment data along Woman Creek as well as this new data. Because sediment will be transported over time, all the data in Woman Creek is potentially relevant. Much of this data has already been summarized in the RFI/RI Workplans for Operable Units 3 and 5.

However, if the purpose of the sampling is to estimate the risk due to resuspension of sediment during construction, more information is needed regarding the construction activities in order to evaluate the proposed program.

Page 21, Table 3: The proposed detection limit for lead, 2000 mg/kg, is too high. The GFAA method referenced can achieve a limit of 1 mg/kg, so this may be a typographical error. Please check and correct the text. EPA believes that a detection limit of 1 mg/kg is appropriate for this study.

The detection limits for the radionuclides should be listed in this table for completeness. Precision and accuracy objectives should also be included.

Page 25, Section 9.0, Data Reduction, Validation, and Reporting:  
Provide details about the factors which will be considered in deciding whether to perform a full data validation. The FSP indicates that the decision will be described in the final report. It is appropriate to include the details in this planning document. Also, it is important to include a discussion about how a level III or IV analytical level and "validatable " data will affect the conclusions of the risk assessment.

Page 26, first paragraph:

a. The air entrainment models referenced in this paragraph must be identified in the FSP in order to ensure that data necessary to apply the models is collected during the field activities.

b. The cities may want to consider calculating an acceptable dose to the identified receptor population (considering multiple contaminants and exposure pathways) and using this to back-calculate an acceptable soil concentration to compare with the collected data. The key to such an analysis will be the modelling assumptions used. EPA suggests that the cities meet with our representatives to discuss this proposal and to agree on the appropriate modelling assumptions. The cities will need to provide details of the construction activities and EPA can provide advice on the appropriate emission factors which will allow prediction of total suspended particulates and PM-10.

c. The risk assessment should be performed assuming no dust suppression techniques and analyzing the total likely resuspension of soils due to the proposed construction activities.

d. Air sampling during the construction activities is an important component which is missing from this plan. The data will be necessary to validate any modelling predictions and to ensure protection of human health and the environment. The sampling which is planned for Operable Unit 3 may accomplish the cities' objectives. EPA suggests that these two programs be coordinated.